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CONTENTS AND SUBJECT INDEX

SPECIAL ARTICLES:

Functional Disorders. By J. H. Musser, New Orleans, Louisiana..... 1

The Bacteriophage as a Therapeutic Agent. By E. W. Schultz, Palo Alto.... 5

Social Aspects of Dermatology. By Ernest Dwight Chipman, San Francisco 11

Heart-Block—Complete, Compensated. By J. Marion Read, San Francisco.....12
Discussion by Verne R. Mason, Los Angeles; John J. Sampson, San Francisco.

Brachial Plexus Block Anesthesia. By J. E. Strode, Honolulu, T. H.....17

The Stimulating Effect of Carbon Dioxid Inhalations in Dementia Praecox Catatonia. By Chauncey D. Leake, San Francisco; Arthur E. Guedel, Beverly Hills, and Mary E. Botsford, San Francisco 20

Amiodoxyl Benzoate in the Treatment of Arthritis. By J. Edward Harbinson, Woodland 24
Discussion by George C. Hensel, San Francisco; George B. Worthington, San Diego.

Partial Gastric Resection Under Local Anesthesia. By Floyd F. Hatch, Salt Lake City, Utah.....30

A Goiter Survey of the High School Students of Contra Costa County, California. By H. Lisser, H. Clare Shepardson, San Francisco, and Rachel K. Miller, Martinez.....33

Tularemia in Nevada. By J. C. Geiger and K. F. Meyer, San Francisco.....38

Tuberculosis in a General Hospital. By Philip King Brown, San Francisco.....41
Discussion by Charles L. McVey, Oakland; C. E. Atkinson, Banning.

The Heart. By Eugene S. Kilgore, San Francisco 44
Discussion by John J. Sampson, San Francisco; R. Manning Clarke, Los Angeles; W. C. Smallwood, Long Beach.

The Lure of Medical History—Pharmacy of the Ancient Egyptians. By J. Van Becelaere, San Diego. (A translation from the Esperanto.).....47

Tribute to Doctor John F. Binnie of San Diego. By William J. Mayo. (From the San Diego *Union.*).....49

CLINICAL NOTES, CASE REPORTS, AND NEW INSTRUMENTS:

Agranulocytic Angina. By John Martin Askey, Los Angeles.....50

Thyroid Gland Enlargement. By E. L. Hansen and Vera Klingman, Logan, Utah 52

Pseudohypertrophic Muscular Dystrophy. By Mark Gerstle, Jr. and Wilson Parker Goddard, San Francisco.....53

BEDSIDE MEDICINE:

Vertigo 55
Discussion by Carl W. Rand, Los Angeles; Ernest S. du Bray, San Francisco; Edward W. Twitchell, San Francisco; Simon Jesberg, Los Angeles.

EDITORIALS:

Referendum Ballots on Incorporation of the California Medical Association.....58

The Bacteriophage—Viewpoints of Schultz of Stanford.....58

"Ford Attacks Medico Ethics".....59

MEDICINE TODAY:

Trauma as Localizer of Systemic Dermatoses. By Moses Scholtz, Los Angeles.....63

Functional Diagnosis of the Reticulo-Endothelium. By W. H. Manwaring, Palo Alto.....64

Claw-Toes. By A. Gottlieb, Los Angeles.....64

STATE MEDICAL ASSOCIATIONS:

California Medical Association.....65
Nevada State Medical Association.....70
Utah State Medical Association.....71

MISCELLANY:

News 73
Correspondence 75
Twenty-Five Years Ago.....76
Department of Public Health.....77
California Board of Medical Examiners....78
Officers of the California Medical Association .....Advertising page 2
Book Reviews .....Advertising page 11
Books Received .....Advertising page 12
Truth About Medicines.....Advertising page 16

ADVERTISEMENTS—INDEX:

.....Advertising page 8

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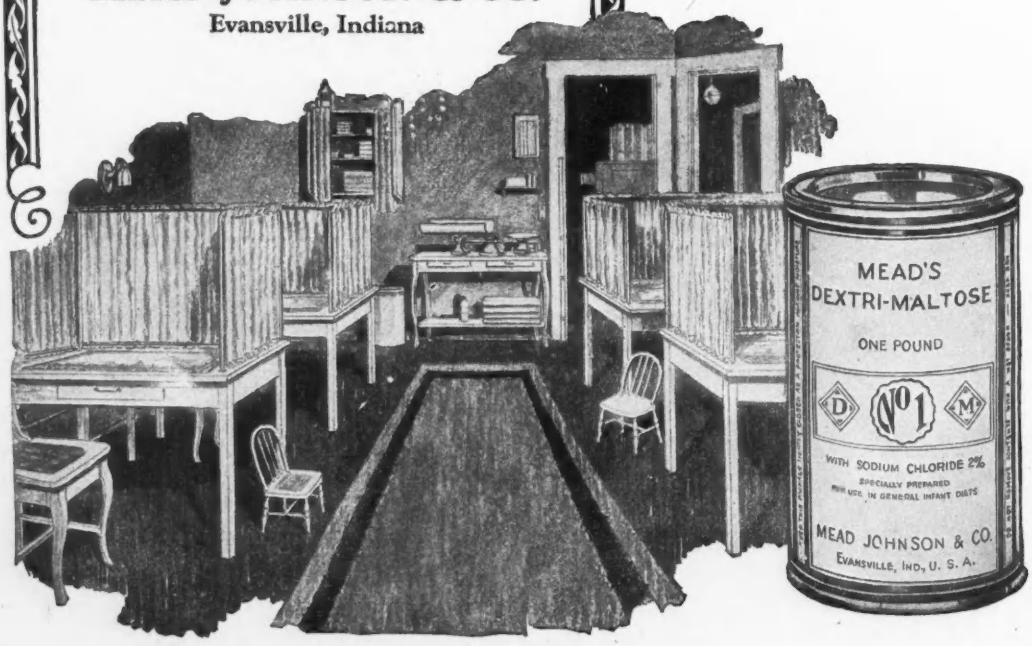

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FUNCTIONAL DISORDERS*

By J. H. MUSSER, M. D.
New Orleans, Louisiana

THAT disorders of function of some of the organs of the body are extremely common is the experience of all physicians, whether engaged in general practice or in one or another of the specialties. Deviation from the normal, without pathologic change, is seen in all types of patients from the out-and-out psychoneurotic to the husky young athlete who may be able to run a half mile under two minutes or play an hour of strenuous football but yet who may have the symptoms associated with hyperacidity. Freedom from the usual ailments of mankind, a strong constitution, and a vigorous personality superficially may seem to be barriers to the many complaints to which man is heir, but this is not the case. Such an individual may have violated many of the rules of personal hygiene, which may for a time be neglected with impunity, but sooner or later he will suffer and pay the penalty for his indiscretions. On the other hand, there are innumerable people, constitutionally substandard, who go through life suffering from many and varied complaints, who are not the victims of organic disease, and whose whole life is a burden to themselves and often, in truth, a continuous source of worry and irritation to their medical attendant. These psychoneurotics and neurasthenics are so demanding, their complaints so polymorphic and their handling so difficult, that they are frequently the bane of the physician's life; yet tact, sympathy, and firmness in dealing with them often repays the medical man manifold. Their symptoms to them are very real; they actually suffer though organically sound, and when they are helped, aided, and assisted through periods of undue stress and strain, as they can be, their gratitude is unbounded and their reaction is to do something in return for what has been done for them. Many a young doctor has gotten his first real start in medicine by his assiduous care of a neurotic who has been grateful to him and has preached his virtues from the housetops. Many a successful practitioner, who perchance knows little of the science but much of the art of medicine, has succeeded because of his inherent, intuitive and often unconscious ability to guide these people.

In the numerous discussions that have taken place in the past few years anent the future of the general practitioner, the fact that he knows well the psychical make-up of his patients is often forgotten. This is a factor which should not be overlooked in discussing what is to become of this invaluable and irreplaceable member of the profession. I doubt very much if specialists, or group practice, or large clinics will ever replace the man who comes into intimate personal contact with the individual patient. He does not lose sight of the patient and consider only the disease. On the contrary, if he errs, it is to err in the other direction; to hold impossible or improbable the development of serious organic disease in one whom he has seen grow up from childhood. On the other hand, in group practice there is entirely too great a tendency to pass the patient from man to man and, in seeking out possible disease, to overlook the psychologic make-up of the patient. But this is to be said in favor of the diagnostic survey performed by a group of qualified specialists: the diagnosis of many psychic disorders, often manifest largely through somatic response is fraught with difficulty; organic disease may be excluded only through the employment of the various physical and laboratory procedures which are available to detect diseases; only when true visceral disease is proved not to be present, may the ultimate diagnosis be reached by a process of exclusion. Diagnosis by exclusion is not the ideal method of determining the type of disease, but it is the only method that should be employed in order accurately to recognize psychogenetic disorders.

TYPES OF FUNCTIONAL DISORDERS

I propose to discuss the functional disorders under two main headings: (*a*) those that occur in the constitutionally sound individual and (*b*) those that appear in the constitutionally substandard. A third great group of patients present themselves to the physician who might be added to this list. I refer to those afflicted with physical disease who suffer from a variety of complaints related more or less closely to the original and primary disorder. Such complaints vary from those directly dependent upon the organic lesion, exemplified by the cough in the young man with rheumatic heart disease with mitral stenosis, to the frank out-and-out psychoses, the dreams and hallucinations that are observed in patients with severe cardiac insufficiency. Innumerable examples of toxic or exhaustion psychoses, of dysfunctions due secondarily to an actual lesion remote from the original focus, might be enumerated. The discussion of this problem well warrants sufficient thought and cogitation to lead to an essay

* From the Department of Medicine, Tulane University of Louisiana School of Medicine, New Orleans.
* Read before the California Medical Association in General Meeting at the Fifty-Eighth Annual Session, May 6-9, 1929.

devoted to it alone, and by better pens than mine has the psychology of the sick been elaborated.

FUNCTIONAL DISORDERS IN THE CONSTITUTIONALLY FIT

The border line between the normal and the subnormal is an extremely delicate filament which may be broken down upon the slightest provocation. Individuals may be considered standard on one occasion; upon another might be accurately grouped among the substandard. A normal individual, basing the question of normalcy upon the basis of certain standards, under still different standards might be considered below the normal psychically and physically. There is no hard and fixed rule which can be followed in judging the average individual. Opinions as to the norm vary as much as do the colors of the feathers of tropical birds of the air. For this reason one is tempted to list as normal only those that have a psychic background well above the general run of the population. Such individuals do not suffer from the diarrhea of fear nor the constipation of worry. They are free from the psychogenic disorders of the average man, but hot pastries may cause them gastric discomfort.

The functional disorders manifest themselves by far the most frequently in digestive upsets; so frequently indeed that large sections of textbooks on medicine and larger sections in books on gastro-enterology are devoted to the so-called gastric and intestinal neuroses. Parenthetically the term "gastric neurosis" is gradually disappearing from medical terminology. More properly "functional disorder" is the appellation nowadays most frequently used. The condition is not necessarily dependent upon a neurosis, but actually is a disturbance of the function of the organ dependent upon a variety of causes.

Functional gastric disorders are extremely common, are protean in their expression, and are usually dependent upon disturbance of motility of the organ. They are prone to occur as a result of dietetic indiscretion, and may occur in king or pauper. Age, sex, race, are etiologic factors of minor importance in the constitutionally sound. Frequently repeated gastrogenic attacks are likely to be followed by, or result in the development of chronic dyspepsia. The dyspeptic is ever with us. Gradually as a result of this more or less persistent indigestion, there is a steady weakening and wearing down of the psychic reserve and the patient may ultimately develop symptoms which are largely neurogenic in origin. The etiologic factors responsible for functional gastric disorders are errors in eating; the unwise selection of the diet is a primary factor, but of secondary importance, only slightly less than this, are the habits of eating, the bolting of the food, the drinking of too much liquid with the meals, the failure to rest physically after meals. Failure to observe the simple, plain rules of gastric hygiene results in a series of disorders which can be obviated by common sense for the most part, though ignorance of the elements of physiology plays some part. These patients are extremely satisfactory to treat if they are at all coöperative, as they usually are. A comparatively few simple directions need be given: short setting-up exercises in the morning, followed by a cold sponge or shower, a diet list of good substantial plain food, regular hours of eating and sleeping, and directions for proper eating. These simple directions are often more potent than the prescription for nux vomica and soda in effecting a cure. Printed directions are always followed more carefully than word of mouth advice. The difference between a specialist and a general practitioner is that the one hands out printed rules to be followed, whereas the other advises exactly the same thing, but, lacking the magic potency of a printed slip of paper, fails to impress the importance and value of what he has said upon the patient.

The realm of functional disorders of the intestine is a broad and comprehensive field of clinical investigation. The problem presented is to determine whether the complaint is organic or is without pathologic causation. In the great majority of patients no one thing can be found of organic nature to explain the chronic constipation nor the occasional diarrhea. Just as with the stomach, so with the intestines, the motor function is most frequently disturbed. This may vary from a mere sluggishness of action, the result of faulty habits, to an out-and-out definitely visualized (roentgenologically) spastic colon, which spasm is not dependent upon disease, but upon an imbalance of the autonomic nervous system in which the sympathetic-vagus relationships are disturbed. Whether or not this is dependent in turn upon endocrine dysfunction, the fact remains that functional intestinal disorders are extremely common. Constipation is often the chief complaint of sufferers from a variety of troubles; but just what is constipation? There is no comprehensive definition of the word nor unanimity of opinion as to what constitutes normal bowel action. For years a fetish has been made of daily, every twenty-four hour, passage of the intestinal contents as a *sine qua non* to good health, yet every practitioner knows persons who are big and strong, well and husky, to whom such a happening rarely occurs and who go seventy-two hours or longer without an evacuation and without any subjective disturbances. If definite statistics could be obtained, perhaps it would be found that more bowel neurasthenics have been developed as a result of physiologic misinformation than have sufferers from so-called chronic constipation been made ill by their presumed abnormality.

The heart frequently manifests abnormalities which may or may not be purely functional, but which, with the present limits of diagnosis, cannot be proved to be organic. Many individuals may become short of breath on comparatively slight exertion, or feel their heart beat too rapidly, who have not heart disease, nor do they have disease elsewhere to explain the condition. A disorder of the nervous mechanism that controls the heart is the true explanation. The fear of cardiac

disease is ever present in the minds of the laity whenever abnormal sensations are experienced in the region of the precordium. They know of the large number of deaths that occur yearly in this country as a result of heart disease; they are acquainted with the occasional sudden death so frequently ascribed to heart failure; they are cognizant of the importance of the heart in maintaining life; and they are ignorant of anatomy and physiology. The nonmedical individual consequently attributes to the heart peculiar precordial sensations irrespective of their origin, be they due to excessive air in the stomach, esophageal spasm, intercostal neuralgia, or what not. Furthermore physicians are often responsible for the development of a cardiac neurosis. Most doctors know that a soft blowing systolic murmur at the apex of the heart is not indicative of heart disease, yet they let a patient know that he has a heart murmur, and thereafter that patient will point with pride to the fact that he has a diseased heart. Certain cardiac irregularities occasion subjective symptoms which are really not of sufficient importance nor productive of enough discomfort to warrant medical care; yet such is the fear of heart disease that invariably the victim of such a syndrome will consult a physician. Ectopic beats or extra systoles do at times cause disagreeable and uncomfortable sensations sufficient to disturb the patient. Granting that in the majority of cases these abnormal beats are indicative of cardiac disease, a goodly number remain which are dependent upon faulty nervous control, possibly the result of the overuse of tobacco and frequently the manifestation of the inhibition of excess of caffein, be it coffee, tea, or coca-cola. The individual with functional cardiac disorders is, like the man with digestive complaints, usually easy to treat provided the fear of heart disease has not become a fixed phobia. A careful reassuring study to exclude organic heart disease and then a full and frank discussion of the mechanism of production of the symptoms is generally sufficient to relieve the patient's mind. Mere words will not always cure the condition, but carminatives, belladonna, or, in the case of the provoking and irksome dropped beats, moderate doses of quinidin will help materially in allaying the symptoms. The dictum that functional disorders of the heart may lead to organic disease is as true with this organ as with the stomach. Long-continued abuse of the stomach may lead to gastric atony; the heart overstimulated by thyroxin may ultimately become the goiter heart.

Functional disorders of the other viscera are relatively rare. At times nervous tachypnea is observed, but rarely does it occur in the normal individual. Transient polyuria is occasionally seen, while frequency of micturition may persist for a few days following a psychic shock, but again the chances are that, when it does, a substandard individual is the one affected. This latter generalization applies also to functional paralyses of speech, to loss of smell and taste, to eye disturbances, to hysterical sensory manifestations. When they occur it is very generally assumed that the person so involved is one with a lack of psychic balance.

FUNCTIONAL DISORDERS IN THE CONSTITUTIONALLY SUBSTANDARD

The realization and the appreciation of the tremendous number of the general population who are psychically below the accepted standards has come about largely as a result of the Great War. Thousands of men broke down before they had ever heard the sound of a gun, while the number of men who suffered from shell shock might be estimated in units of tens of thousands rather than in thousands, were the figures based upon a consideration of the very much greater number who had none of the outstanding evidences of the disorder yet who came home with a damaged psyche, rather than upon the number actually hospitalized. Furthermore it is doubtful if any standard can be fixed as to the psychic response of a given individual to an emotional disturbance of greater or less intensity. The apparently emotionally unstable soldier, according to peacetime standards, would go through the agonies of war grossly, at least, unchanged while his placid, bovine-like platoon mate, to all intents and purposes normal, broke down early on slight provocation. Perhaps there is no normal. As Woodyatt † so pungently puts it: "All men, normal or sick, have emotions and emotional conflicts, and all are affected physically by them." Be that as it may, all medical men have certain ideas about who is or is not a psychoneurotic or a neurasthenic, and it is on this group, those who present definite neurotic stigmata, I would dwell for a few moments.

The etiologic background for this group is of interest. They are born, not made neurasthenics. The lack of emotional control is inherent in them, but extraneous factors are responsible for their manifestations of disease, of functional disorders, of pains and aches, of abnormal sensations, and of what not. These extraneous factors, or perhaps environmental stimuli are numerous. They include grief, worry, sexual repression, domestic trials, marital troubles, social maladjustment, severe, sudden or unaccustomed mental shock. If the psychically unstable could live the placid, peaceful parasitic life of an ameba they would never suffer the inevitable breakdown, but unfortunately such is not the case. They must come in contact with the outside world, and society expects them to carry the usual duties and obligations of their social stratum.

Of these several factors enumerated above which may be the stimulus necessary to produce psychic abnormalities, the sexual, whether it be sexual perversion or repressions, stands first in the opinion of neuropsychiatrists. That such would not be the opinion of the great majority of physicians I am quite sure, unless they be influenced by the enormously fecund literature of the Freudian school. If the conflict between the ego and sexual instinct "is of such a character

† Woodyatt, R. T.: Psychic and Emotional Factors in General Diagnosis and Treatment, Jour. Am. Med. Assn., 89:1013, 1927.

that repression takes place, then the energy underlying the instinct is, so to speak, dammed back beyond the control of consciousness, where it may begin a career of unconscious self-expression" (Ramsay Hunt). This statement certainly does not apply to the great majority of the neurasthenic patients seen by the average practitioner. Much more potent than sex in producing subjective phenomena are the minor factors of jealousy, selfishness, marital unhappiness, a spoiled child, overwork, business reverses, monotony of life, or even a poor cook. These environmental influences undoubtedly seem to play a more important part in producing psychic disturbances in the average office patient than do the primitive instincts of reproduction and preservation. As distinguished a neurologist as Ramsay Hunt says that in dealing with problems of the mind, of the functional type, the environmental factors are of equal if not greater importance than constitutional factors. This statement may be true, but the environmental influences certainly affect but little the psychically sound.

THE MANIFESTATIONS OF FUNCTIONAL DISORDERS IN THE SUBSTANDARD

The expression of functional nervous disease is so varied, so manifold in its manifestations that it is an utter impossibility to catalogue it in all its ramifications. Consider the patient with loss of sensation in the right arm not limited to any special sensory nerve area or the unwounded ex-soldier who ten years after war still has a persistent limp, or the woman who cannot taste or smell after a marital explosion, or the girl with a globus hystericus, or those afflicted with the astasia-abasia complex, or hystero-epileptiform convulsions, or hysterical spasms and contractures, or hallucinations and even delirium, and you touch only the surface of the hysterical disorders. These fortunately are relatively rare and usually fall into the field of the psychiatrist. The internists or the specialists in other branches rarely see these patients and when they do, refer them to those who see many of these cases, have studied them and their behavior, and are, consequently, well qualified to undertake their management.

To the medical man, however, come, in ever increasing number, those unable to stand the stress of modern civilization but who manifest this lack of coördination with their environment and surroundings by relatively minor outbreaks. As with functional disorders in the constitutionally sound, so in the inheritor of an unstable nervous system, the gastro-intestinal and cardiac syndromes are most likely to predominate. The series of subjective, and often objective, phenomena of which these patients complain are much more exaggerated, much more intense and much more likely to occur on slight stimulation than in the normal individual. A bad taste or loss of taste, dryness of the mouth, loss of appetite, a desire for unusual articles of diet are frequent expressions of a psychogenic upset at the beginning of the alimentary tract. Progressing down this system spasm of the esophagus is very frequently a result of a vagal dysfunction which may manifest itself in a number of different ways in the patient. Abnormalities of the motor function, the secretory and sensory functions of the stomach are very common indeed. It is quite possible to have an involvement of one or the other of these several functions, but usually it occurs as a combination of all. The duodenum is likewise affected and, while it is quite possible that the upper intestinal tract may suffer from certain functional derangements, they are difficult to determine and hard to elucidate. The lower alimentary tract, however, is the frequent seat of functional disorders which, as with the stomach, may be secretory, sensory or motor, but which are usually in the latter group. Cecal spasm and colonic spasm and rectal spasm are productive of pain, discomfort, constipation, and other symptoms often out of all proportion to the lesion demonstrable by the roentgen ray.

One of the common manifestations of a disturbed psyche observed during the war, is characterized by marked muscular asthenia, rapid heart, an extremely labile blood pressure, paroxysmal nocturnal dyspnea, and many nervous complaints, using the term "nervous," however, to indicate rather transient, evanescent subjective sensations which are extremely fugacious in other patients but which in these soldiers persisted over a long period of time. They had corneal anesthesia, absence of the gag reflex, pronounced vasomotor phenomena, as well as a tachycardia, exaggeration of the tendon reflexes and muscular asthenia without neuromuscular causes. Considerable attention was paid to this syndrome during the war, and on the return of the medical officers to civil life they found that it was a syndrome quite common in everyday life, occurring in both sexes. In addition to this, the constitutionally substandard individual is frequently prone to have a tachycardia, attacks of palpitation, to suffer from paroxysmal tachycardia, to have ectopic beats, all of which are a prolific source of mental worry to the subject. Likewise, the neurasthenic, having a very low pain threshold, frequently suffers from pain sensations in the thorax which he ascribes to his heart. These sensations, of course, are not produced by disease of the organ, but it is often very hard to convince the neurasthenic that such is the case. Secretory phenomena are observed in these patients with marked frequency and ofter they are suggestive of endocrine disorder.

The glands of internal secretion may be affected and functional disorders arise as a result of severe emotional shock. One of the most pronounced and severe cases of exophthalmic goiter I have ever seen appeared twenty-four hours after news had been brought to a young woman that her husband had been suddenly killed. Individuals with diabetes are often profoundly affected by psychic trauma. It is quite possible that the chromaffin system is disturbed frequently.

Other systems or viscera of the body may be involved, without suggesting organic disease of the viscera. Headache, pressure on the head or in the head, constriction around the head, vertical pain, are seen when there is no increase of intra-

cranial tension. Pains and aches all over the body and neuralgiform-like attacks occur. Sexual neurasthenics, particularly young males, are legion. Young women are often conscious of abnormal sensations in their breasts or in the region of the ovaries. It would be possible to continue indefinitely enumerating the various manifestations of neurasthenia, psychasthenia or hypochondriasis.

Treatment of the milder forms of these psychogenic disorders is a satisfactory and absorbing problem. If the physician will only take time to analyze the everyday life of such a patient, the irritating factor can often be discerned and discovered and, while it is often not possible to do away with it, methods may at least be suggested which will mitigate the frequency and the severity of the stimuli. When this is done the general rules of hygiene should be laid down and the patient should be given plenty of both mental and physical rest. In the obstinate and exaggerated cases a thorough Weir-Mitchell rest cure may be indicated, but in the milder forms daily rest in the middle of the day will often suffice. Other rules of hygiene as suggested in the treatment of the constitutionally strong should be employed. In these more severe forms where the patient is constitutionally substandard, tact, thoughtfulness and kindness will do much to aid the patient. The discerning physician often becomes the safety valve for emotional outlet. The mere recital of the trouble and the confiding in one who has sympathy acts as a stabilizer, for a time at least, to the individual who is suppressing or repressing certain emotions. The physician can do much for these people. That he can do more than he is now doing is shown by the host who flock under the protecting wing of every cult that offers a shelter. I would plead for these individuals that they be treated as friends and fellows and that they be considered as sick, as ill, and as diseased as he who has a true organic disease.

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THE BACTERIOPHAGE AS A THERAPEUTIC AGENT*

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INTRODUCTION

SCARCELY more than a decade has elapsed since d'Herelle [1] published his first observations on the strange phenomenon which we have come to associate with his name. Something like a thousand scientific papers now point to the interest which his discovery has commanded. D'Herelle's basic observations have been repeatedly confirmed and considerably extended. Indeed, present-day knowledge of the extent of the phenomenon among bacteria of all sorts, pathogenic and nonpathogenic, cannot help causing one to wonder why a phenomenon so striking in its manifestations, and of such general occurrence managed to escape detection so completely during a half-century of active bacteriological investigation. While many of the studies have centered around the interesting question of the nature of the agent responsible for the phenomenon of transmissible bacterial lysis, as well as around other questions of more academic interest, some investigations have dealt with the possible application of the bacteriophage to the prevention and treatment of infectious diseases. Naturally a substance which even in minute quantities is capable of killing and dissolving bacteria in cultures, and which at the same time is known to be entirely harmless to animal tissues, deserves investigation as a potential therapeutic agent. That the hopes which prompted the inquiries in this direction have not been altogether unfounded, may be gathered from the general trend of some forty reports now in the literature. Time does not permit me to review these in detail. I shall only be able to indicate the general trend of these results and point out the conditions which unfortunately tend to limit the application of this form of therapy.

REVIEW OF 'PHAGE THERAPY

D'Herelle [2 3] was apparently the first to apply the bacteriophage therapeutically. He administered it to seven cases of *Shiga dysentery,* and noted prompt recoveries in all of the cases treated. Da Costa Cruz [4] in South America claims to have supplied more than ten thousand ampoules of 'phage to physicians and hospitals in Brazil, where, I understand, this form of therapy is now routinely employed in the treatment of bacillary dysentery. According to da Costa Cruz, the results of 'phage therapy have been uniformly good. A potent 'phage is said to bring the bloody stools to a stop, as a rule, within twenty-four hours, and to launch the patients upon an immediate convalescence. I have in my possession a letter received by Doctor d'Herelle from a medical officer in the Sudan to whom 'phage suspensions were supplied while I was with d'Herelle in Egypt several years ago. It reads in part as follows: "The results of treatment of bacillary dysentery with it (the bacteriophage) have been little short of miraculous. . . . In every case, with the solitary exception of a child who was practically moribund when brought to the hospital, the bacillary dysentery has cleared up within twenty-four hours." The value of the bacteriophage as a therapeutic agent in bacillary dysentery has also been confirmed by other investigators (Pereira,[5] Spence and McKinley,[6] Munter and Boenheim [7]). It is of interest that only two, and these are early papers, deny its therapeutic value in dysentery (Otto and Munter,[8] Davison [9]).

Encouraging results have also been reported in *typhoid fever* by a number of investigators (Beckerich and Hauduroy,[10 11] Philibert and Hauduroy,[12] Hauduroy and Arsimoles,[13] Alessandrini and Doria,[14] Smith,[15] Richet, Azerad and Delarne [16]). The results obtained in typhoid, however, lack the high degree of uniformity which mark those recorded for bacillary dysentery. In the treatment of typhoid fever it appears that while some of the cases may make spectacular recoveries, others show themselves entirely

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uninfluenced. This at least has been the experience of most of those who have reported on a number of cases. Only one report (Herderschee and Wolff [17]) has appeared in which the results have been entirely negative.

Favorable results have also been recorded by a considerable number of investigators who have tried 'phage therapy in *colon infections* of the urinary tract (Courcoux, Philibert and Corday,[18] Beckerich and Hauduroy,[19] Alphonsi,[20] Arloing, Dufour, Bouvier and Sempé,[21] Philibert,[22] Lehndorff,[23] Pereira,[5] Winans,[24] Frisch,[25] Zdandky,[26 27 28] d'Herelle,[3] Larkum,[29] Ravina,[30] Dalsace,[31] Cowie,[32] Krueger, Faber and Schultz[33]). While one must be impressed by the striking manner in which some of the cases seem to have responded to this form of therapy, it is, nevertheless, true that not a few failed entirely to respond to the treatments. Here also there seem to be factors operative within the host which tend to influence greatly the results in individual cases. Whether these disturbing influences may eventually be brought under control remains to be seen.

More uniform results seem to follow 'phage therapy of *staphylococcus infections.* Bruynoghe and Maisin [34] as early as 1921 injected 'phage near the base of furuncles and carbuncles of six patients and noted in all of them marked improvement within forty-eight hours. Gratia[35 36] soon after reported excellent results in something like fifty cases of staphylococcus infections, including furunculosis, carbuncles and subcutaneous abscesses. Encouraging results have also been reported following the use of staphylococcus 'phage in the treatment of sycosis (Gougerot and Peyre,[37 38]); of staphylococcus cystitis (Nelson Barbosa [39]); and of staphylococcus wound infections (McKinley [40]). Recently Larkum,[41] of the Michigan State Board of Health, has reported favorable results in sixty-five out of sixty-six cases of furunculosis. In a subsequent paper [42] he states that the series has been extended to "three hundred cases of furunculosis, more than fifty cases of acne,* eight or ten cases of styes, and several cases of osteomyelitis." According to Larkum, the results have been "sufficiently striking to cause reputable physicians, men of years of experience in practice, men usually cautious in their reaction to therapeutic agents, in submitting their reports, to use such adjectives as 'wonderful,' 'striking,' 'remarkable.' "

This summarizes the diseases around which most of the studies on the therapeutic value of the bacteriophage have thus far centered. You will note that these reports are confined to bacillary dysentery, typhoid and paratyphoid fever, colon infections of the urinary tract and to staphylococcus infections. A few isolated ones have also appeared on its use in the treatment of certain other infectious diseases. Thus McKinley [40] claims to have realized a rapid recovery in a case of *streptococcus abscess of the lung,* treated by the instillation of 'phage into the infected cavity. Le Louet [43] of Indo-China has reported rapid improvement and recoveries in water buffaloes stricken down with *hemorrhagic septicemia* (Barbone). D'Herelle [44] claims to have observed rapid recoveries in a small number of *plague* cases treated in Egypt, and more recently [45] has reported some very striking results in the treatment of *cholera* in India.

A careful examination of the literature tends to leave one in no doubt as to the potential therapeutic value of properly selected bacteriophages. At the same time it is perfectly clear that the application of this form of therapy presents certain well-defined limitations. It is to these limitations, some of which may not be altogether insurmountable, that I wish to devote most of my paper.

FACTORS WHICH TEND TO LIMIT THE APPLICATION OF 'PHAGE THERAPY

Attention has been called to the fact that in bacillary dysentery the results, when a good 'phage is employed, tend to be strikingly uniform, while those in typhoid and paratyphoid fever, in colon infections of the urinary tract and in other infections mentioned, have a tendency to be exceedingly irregular. One may observe in the latter group spectacular recoveries in part of the cases, while others in the same series remain entirely uninfluenced. The question which naturally arises in one's mind is this: Why do the results in bacillary dysentery tend to be so much more uniform than those in other infections? There are probably several reasons for this. The question may possibly be answered in part on the basis of well-established laboratory observations. It is not only known that individual races of bacteriophage may differ widely from each other in their range of action and in the intensity with which they may attack different organisms, but it is well recognized that one may observe marked differences in the uniformity with which the individual strains of given bacterial species may yield themselves to the action of one and the same 'phage. Bacteria may on this basis be divided into two general classes. In the first we find those species in which the individual strains behave in a more or less homologous manner with reference to a particular 'phage. A 'phage which, for example, happens to be active for one strain of such a species is likely to be equally active on all other strains of the species. Typical examples of such *homologous species* are *B. dysenteriae* and *B. pestis.* Were the strains of all pathogenic bacteria as uniformly susceptible as dysentery bacilli, the problem of determining the therapeutic value of the 'phage in any disease would probably be greatly simplified. From the laboratory standpoint it would then become merely a matter of supplying the clinician with a race of bacteriophage possessing marked virulence for the particular bacterial species concerned. Unfortunately, however, most of the pathogenic bacteria belong to that larger group in which the individual strains of a species often differ widely in their susceptibility to 'phage

* It is of interest that successful results have also been reported by other investigators (d'Herelle, 1928) in cases of acne treated with polyvalent staphylococcus bacteriophage, though the agent of this disease is held by some to be B. acne, an anaërobic diphtheroid.

action. *B. typhosus* may be cited as an example. An antityphoid 'phage, highly active on one or two strains of *B. typhosus,* may not be at all active on other strains of this species. Another antityphoid 'phage may leave these particular strains entirely untouched, and in turn lyse one or more other strains of the species. The situation which this *heterologous* behavior gives rise to in a therapeutic study of this sort becomes obvious at once.

There is another type of bacterial resistance to 'phage action which should be considered. It is the resistance which an otherwise susceptible bacterium may acquire as the result of exposure to a weakly or only moderately active 'phage. This type of resistance, which one may picture as an acquired immunity on the part of the bacterium, may be induced either *in vitro* or *in vivo. In vitro* one sees it in the form of secondary cultures appearing after the acme of lysis. *In vivo,* it may be acquired as the result of a spontaneous invasion of a weak or moderately active 'phage, or as the result of the therapeutic administration of a 'phage of insufficient virulence to complete the eradication of the causal organism. Resistance as the result of a spontaneous invasion of a bacteriophage is not infrequently met with in chronic *B. coli* infections of the urinary tract. Sickenga,[46] for example, found 'phages constantly present in the urine of four cases of pyelitis, and occasionally present in the urine of twelve other cases. Larkum,[29] who has studied this question carefully, found a 'phage present in one or more specimens of urine in about 36 per cent of the cases examined. He also noted that, whereas strains of *B. coli* isolated from the urine in acute cases are practically always susceptible to stock bacteriophages, those isolated from the urine in chronic cases are almost always resistant. Doctor Krueger, in collaboration with Doctor Faber and myself (Krueger, Faber and Schultz [33]), recently made similar observations on a number of urinary cases. Krueger recovered weak to moderately active 'phages from the urines of 70 per cent of the chronic cases, in contradiction to only 8 per cent of the acute cases. Along with this he also noted a much greater incidence of 'phage-resistant organisms in the chronic cases. It does not necessarily follow, however, that all of the 'phages which naturally invade the infected urinary tract, remain of weak activity. The virulence may ascend rapidly and tend to precipitate an immediate spontaneous recovery, both from a clinical and bacteriological standpoint, as Krueger has been able to show in several cases which he followed carefully. Not infrequently, however—and this for reasons that are not clear—a balance is established between the causal microbe and the bacteriophage, and thereafter the two may coexist in the environment. In treating these particular infections the problem, therefore, becomes one of finding a 'phage of unusually marked virulence for the organism. This is not always an easy matter, but can at times be successfully accomplished.

The bearing which these facts have on the therapeutic application of the bacteriophage cannot easily escape one's notice. An improperly chosen bacteriophage, administered therapeutically, may do no more than lead to the formation of secondary, resistant forms, for which it may in turn become much more difficult, if not impossible, to find a suitable 'phage. Not only is the possibility of gaining an immediate therapeutic result lost, but it is at the same time made more remote. One cannot, therefore, exercise too much care in choosing the bacteriophage which is to serve the therapeutic needs in a given case.

From what I have said, it must not be assumed that all that is necessary for the realization of a therapeutic result is to choose, or have chosen for you, a 'phage possessing maximum virulence for the organisms responsible for the infection. While this undoubtedly fulfills an important theoretical requirement, it is certain that not all cases respond to treatment even when this requirement is fulfilled. There are undoubtedly other factors which may at times influence the results. One of these factors may have to do with the constant variation of microörganisms in their susceptibility to 'phage action. Another may perchance have to do with the antigenic action which the bacteriophage itself is capable of exercising. Let me enlarge on this a little. It is well established (Bordet and Ciuca,[47] and others) that specific antiphagic antibodies can be easily demonstrated in blood of experimental animals having received bacteriophage suspensions parenterally over a brief period of time. Recently Sonnenschein,[48] Katsu,[49] and d'Herelle [45] have called attention to the fact that antiphagic antibodies may appear naturally in the blood of patients suffering from certain infectious diseases. If we stop to consider the frequency with which natural 'phage may be recovered, for example, from the urine of patients suffering with chronic urinary infections, we can begin to see how under certain conditions antiphagic antibodies, capable of inactivating at least certain 'phages, might be caused to make their appearance. These might conceivably neutralize the action of some stock 'phages, otherwise possessing the properties requisite for a successful therapeutic result.

There are undoubtedly still other factors which may influence individual therapeutic results. Inaccessible and sparsely scattered organisms may not be reached by the 'phage before it is itself eliminated from the body. One must remember that while the 'phage increases in concentration at the expense of bacteria which it dissolves, it is promptly eliminated from the body when no further organisms are within its reach, at the expense of which it may regenerate. Marcuse [50] for this reason is inclined to attribute some of the failures in typhoid to incomplete contact between bacteriophage and organisms in the body, and he therefore recommends intravenous injection in addition to ingestion of the 'phage. On the other hand, Hauduroy [51] has found that bile inter-

feres with bacteriophagy *in vitro*. It may, therefore, be possible that some of the failures in typhoid are directly referable to the inaccessibility of bacteria in the gall bladder. Analogous conditions may influence the results in other infections. The 'phage may, for example, become adsorbed to the colloidal matter of an inflammatory exudate and so thrown out of action. It may, moreover, be actually taken up by the leukocytes (Bruynoghe and Maisin[52]). Then again, the reaction of the environment may not always be altogether suitable for bacteriophagy, a slightly alkaline medium being required. In urinary infections an acid urine must therefore undoubtedly influence the results. While there probably are still other factors which may in individual cases contribute to failure, those mentioned will probably suffice to indicate the complexity of the problem.

THE PROPER PROCEDURE IN 'PHAGE THERAPY

Despite the fact that there are factors which tend at times to restrict its successful application in the treatment of disease, we must not forget that when *properly chosen* the 'phage may prove an exceedingly helpful therapeutic agent. The proper selection of a bacteriophage for therapeutic purposes is undoubtedly of paramount importance. Such a 'phage must not only be capable of lysing the causal organisms *in vitro*, but must *possess this property to an exceptionally high degree*. Not only must the 'phage be capable of inducing complete clarification of cultures under set conditions, but it should also tend to *keep down the appearance of secondary cultures*. We must keep in mind that in employing the 'phage therapeutically we are endeavoring to effect complete sterilization of the infected region. Whenever a 'phage is employed which is of insufficient virulence to accomplish this with one sweeping stroke,* the effect is likely to be only a temporary reduction of the flora, with a subsequent ascendency of secondary, and this time 'phage-resistant forms.

I have called your attention to the fact that individual strains of most bacterial species may differ widely in their susceptibility to bacteriophages active for bacterial species in general. For this reason it is quite impossible to say whether any particular stock 'phage actually possesses the virulence theoretically necessary for a satisfactory therapeutic experiment. *This must always be first determined by preliminary tests in the laboratory.*

Let me indicate the procedure which should properly be followed. The first step is naturally to get the causal organism out in *pure* culture. Whenever possible the material being cultured should be seeded directly on solid media. If this is not immediately possible or desirable, it should be plated out as soon as possible. Even though the plated cultures appear unmixed, one should select five or six representative colonies and transfer these to as many agar slants. Suitable young broth cultures should then be prepared from each of these agar slants and tested against the various 'phages at one's disposal.† Only those tubes should be filtered for therapeutic use which show complete clarification and in which secondary cultures tend to be suppressed.

THE THERAPEUTIC ADMINISTRATION OF THE 'PHAGE

Possibly I should say a few words regarding the methods commonly employed in administering the bacteriophage therapeutically. This is a question which is frequently put to me by physicians interested in giving it a trial. In *dysentery* the practice is to administer the bacteriophage exclusively by mouth. A dose of two or three cubic centimeters of the lytic filtrate is generally given in a half glass of water. This treatment may be repeated in twenty-four hours. While there are no harmful results following the continued administration of the 'phage by mouth, nothing is gained by doing so. If a definite response does not immediately follow two or three doses of the 'phage, no therapeutic effects are likely to be realized. In *typhoid fever* the best results seem to follow a combination of oral and subcutaneous administration, two cubic centimeters being administered simultaneously by each route. Here again the treatment may be repeated in twenty-four hours, but should not be extended beyond this period. This applies particularly to the subcutaneous injections. In *colon infections of the urinary tract* the treatment generally recommended is to instil about ten cubic centimeters of the bacteriophage suspension, diluted with about five volumes of physiological saline, into the bladder, and in the event there is an associated pyelitis, introducing at the same time some of the liquid into the pelvis of the kidney. *These treatments should be preceded and accompanied by alkalinization of the urine,* since an alkaline medium is essential for bacteriophagy. They should also be accompanied by two or three subcutaneous injections of undiluted bacteriophage, administered in doses of about two cubic centimeters each, given twenty-four hours apart. All other medication should be withdrawn for the time being. In *staphylococcus infections,* the practice is to give two or three subcutaneous injections of two cubic centimeters each at intervals of twenty-four hours. For carbuncles, about one cubic centimeter should be injected in small quantities of 0.1 to 0.2 cubic centimeters in the immediate region of the lesion. *Wounds,* in addition to such regional subcutaneous injection should be dressed with gauze well moistened with undiluted bacteriophage suspension.

There appear to be no contraindications to

* It is for this reason that the bacteriological as well as clinical results of 'phage therapy should be read if possible within seventy-two hours after the treatments are begun and the question of its actual sterilizing action answered.

† Because of the increasing number of requests which have come to us from physicians for bacteriophage suspensions, we have recently undertaken to provide a special service (Bacteriophage Research Laboratory, Stanford University, California), open to a limited number of physicians desiring to investigate the therapeutic value of the bacteriophage. Physicians may send us through their clinical laboratories pure cultures of the organisms on which they desire the so-called 'phage-susceptibility test carried out. In the event the organisms are fully lysed, we send them suitable 'phage suspensions for therapeutic trial. Physicians using this service are expected to furnish us reports on all cases treated.

the use of the bacteriophage therapeutically. No harmful effects from its use have been reported. I must, however, caution against the use of turbid suspensions. The filtrates naturally contain no preservatives. Ampoules which are not perfectly clear should be discarded.

THE THERAPEUTIC ACTION OF THE 'PHAGE

A few remarks are in order relative to the ways in which 'phage suspensions may be considered to operate as therapeutic agents. Theoretically at least, the bacteriophage exercises no direct effect on either the damaged or normal tissues of the host. Its immediate action, when it does operate effectively is comparable to the action of a specific chemotherapeutic agent, or to the action of an antitoxin acting on a toxin. In other words, its more direct action is on the agent of the disease. It probably contributes only indirectly toward whatever immunity may follow the infection. It certainly exercises no corrective influence on the anatomic conditions which may have predisposed to or followed the original infection. Cases have been reported to me in which unquestionable improvement immediately followed the administration of the 'phage, but in which the improvement was only of short duration. Instances of this type are probably most often noted in urinary infections, in which disturbing anatomic conditions exist. These anatomic conditions we have no right to expect the bacteriophage to overcome, nor have we necessarily any right to expect a durable immunity immediately following the administration of a 'phage. We must keep in mind that even though we administer a highly active bacteriophage, its residence in the body may only be temporary. It is rapidly eliminated from the body in the absence of susceptible organisms. One should moreover keep in mind that whatever transient immunity may be acquired due to the presence of the 'phage itself, this immunity is directed only toward certain specific organisms, *sometimes only against given strains of an organism.* With this we should also associate the fact that in certain infections, as for example urinary infections, the bacterial flora may at times shift to new strains and even new species. It seems to me that all these facts have an important bearing on when, in a given case, the results of 'phage therapy should be read. If we keep in mind that we expect the 'phage to act primarily as a sterilizing agent, there can be no question that the time to begin to make readings of the results is immediately after the 'phage has been given sufficient opportunity to accomplish the task at which it is set to work. The interval of time which may be allowed should probably not exceed forty-eight hours. What are the clinical conditions and the bacteriological findings at the end of this time, and what are the findings at short intervals thereafter? On this hinges the question of whether a bacteriophage actually possesses sterilizing properties. One is naturally always interested in the permanence of the results, but this is in reality not the question immediately before us. In urinary as well as other infections this may depend in part on associated anatomic conditions; upon the opportunities for immediate reinfection; and upon the speed with which the bodily defense mechanism asserts itself. In evaluating the results of 'phage therapy, one should keep the distinction between therapeutic effect and immunizing action in mind. They are not necessarily synonymous. Immunity may be associated with or immediately follow recovery, but not invariably so, as we all know.

I have stressed the immediate lytic action of the bacteriophage as the mechanism of primary importance in freeing the tissues of invading organisms. This is seemingly, however, not the only way in which a 'phage may contribute to recovery. In certain infections the bacteriophage may come to the aid of the natural defense mechanism of the body. I refer particularly to the rôle which it may play in enhancing phagocytosis. It has been shown by a number of investigators (d'Herelle,[2] Weiss and Arnold,[53] Nelson,[54] Smith,[55] and others) that its presence greatly facilitates phagocytosis of 'phage-susceptible bacteria. Evidence of this may be noted at times clinically. In carbuncles, for example, I have noted more than the usual degree of purulency following a rapid regression of the signs of intense inflammation. There seems little doubt that in pyogenic infections phagocytosis is facilitated by the presence of a suitable bacteriophage.

While the immediate rôle the 'phage may play in freeing the organisms from the tissues should probably be considered the most important in the attainment of a successful therapeutic result, this probably does not entirely sum up the effects of this form of therapy. I allude this time to the antigenic action of the bacterial proteins carried in the filtrate, plus those arising from the bacterial dissolution within the body. While bacterial lysis may be regarded as contributing in a direct way to recovery, the products of this lysis probably serve to stimulate the formation of such immunity as may naturally follow a given infection. The latter does not necessarily follow closely on the heels of the former. Time, as we know, is an important factor in the formation of any sort of acquired active immunity. The relative importance of the two factors is well brought out by some experiments which d'Herelle[8] carried out on the prevention of hemorrhagic septicemia in the water buffaloes of Indo-China. He noted on administering the bacteriophage prophylactically in these animals two refractory periods, separated by an interval during which the animals were fully susceptible to experimental inoculation. The first refractory period, only of forty-eight hours' duration, could be directly attributed to the presence of the injected bacteriophage. With the elimination of the latter from the body the animals again became fully susceptible. This fully susceptible period was followed in due time by a second and much more lasting refractory period. Since the second refractory period could also be induced by filtrates in which the 'phage itself had been in-

activated, it is necessary to conclude that in the production of this more lasting immunity the products of 'phage lysis, rather than the 'phage itself, played the important rôle.

CONCLUDING REMARKS

I hope that this brief review serves to indicate somewhat the complexity of the problem at hand. While there undoubtedly is something to support the view that the bacteriophage possesses therapeutic properties, it is at the same time clear that its usefulness tends to be limited by factors which may or may not eventually be brought under control. The time has certainly not yet arrived when the wholesale marketing of stock-bacteriophages, with therapeutic claims, can be scientifically justified. Before this can be justified it will become necessary to probe much more deeply into the question of its therapeutic merits. Larger collections of highly active bacteriophages will have to be brought under our command; standards will have to be determined for 'phage products; the best method of carrying out the treatments will have to be learned; and other questions of a similar nature will have to be settled before commercial distribution can be properly undertaken. It may, indeed, never be possible to justify its commercial production. Its usefulness at best may prove restricted. Only a careful and open-minded inquiry can reveal to us the real merits of this new form of therapy.

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SOCIAL ASPECTS OF DERMATOLOGY*

By ERNEST DWIGHT CHIPMAN, M. D.
San Francisco

IN choosing this topic I wish to stress the human side of medical practice. And when I say the human side of our practice I am thinking of the thousand and one considerations which influence and motivate us in our contact with the public at large or with the individual patient. For, after all, the practice of medicine means infinitely more than the making of a diagnosis and the prescribing of a remedy. Many collateral obligations devolve upon physicians, obligations to serve, perhaps a little beyond the ordinary line of duty.

In a comparatively recent book entitled "America Comes of Age," André Siegfried dilates upon the puritanic urge for uplift and the craze for "service" so prevalent in this country. His thought seemingly is that much of this talk is in the nature of "window dressing," mostly insincere and largely for revenue. I certainly do not want to be included among those who sing of service and sigh for profit in the same breath. Calls constantly come to physicians, insistent calls for service that are untainted by the thought of pelf. It matters not to what special field of medicine our activities are confined, to all of us there come patients with problems so poignant they transcend such trivial procedures as the writing of a prescription or the turning on of some current. In dermatology and syphilology we meet certain problems, one might say stock problems, which call for a service from us over and above the routine treatment and advice. You are all familiar with the patient to whom the four plus Wassermann comes as a bolt from the blue. You know, too, of the young man who is Wassermann-fast and who has had years of treatment with no clinical signs and who wishes to marry. What about these patients? Have they nothing to expect of us beyond a reasonable facility with the pen or the Luer syringe?

We meet patients with inoperable carcinomas, we meet lepers, we discover coccidioidal granulomas, and these are frankly tragic; but day by day we come in contact with numerous quasi-tragedies and often pass them by with an unseeing eye.

An ordinary case of acne does not usually cause us much concern, but it may easily be the starting point of a marked neurosis. How often do we see patients, young women as a rule, who become so depressed over this condition that they will not attend the most informal of functions. They remain at home brooding over and exaggerating to themselves their disfigurement until they border on melancholia. Our colleagues may jokingly refer to us as "beauty doctors" for treating these conditions, but we know that successful treatment has a much more profound general effect upon the well-being of this patient than any system which these jesters might employ.

Then there is the patch of psoriasis. Upon the knees of the longshoreman this does not count for much. Upon the elbows of the débutante it rates as a social tragedy. The hypertrichosis, the nevus, the keloid in young women who are, or think they are, of an age to get the most out of life are calamities of the highest degree. The victims of these blemishes which we are prone to pass over lightly often require an amount of care and understanding which is seemingly disproportionate to the extent of the lesions.

These are just a few random references to our individual contacts. We have certain obligations to the public. It is incumbent upon us to build up sanely and without creating panic, the truth concerning cancer and the precancerous conditions about which we are frequently consulted. On the other hand we must help to tear down some of the old inherited notions such as "bad blood causes pimples," "uric acid causes all sorts of rashes."

Personally one of my fondest duties is to persuade an inquisitive mother-in-law that the eruption on the son-in-law is in nowise conditioned upon the state of the blood, or that we have had a complete analysis of the blood made and it appears chemically pure. It is also pleasing to assure the wife that the husband's eruption does not denote moral turpitude, and we must accept the assurance of the mother of the babe with an eruption that there is no taint in the blood on her side of the family. Having done this we must make it plain that the baby's disease is in nowise hereditary and that the blood of her husband and his forbears is probably 100 per cent pure. Some mothers seem to cherish this information quite as much as the prescription given for the baby.

One manifest duty to the public is to control the spread of epidemics. What concerns us at the moment as a real public health problem is the rapid cure and efficient prophylaxis in epidermophyton infection. The fact that so often it is latent makes many subjects doubtful of its seriousness. As conscientious dermatologists we should do our best to disseminate the truth about this widespread infection.

Another duty we owe to society which I should like to emphasize because it is one which we have neglected, is teaching hospital nurses, particularly those in which there are training schools, the application of a satisfactory dermatologic dressing. It may appear a broad statement, but I venture to assert that not ten per cent of the trained nurses we meet are capable of applying a satisfactory dermatologic dressing. A frequent method of applying an ointment to an inflamed surface is to spread it upon the woolly side of a strip of lint, bind it on and allow it to stick like so much adhesive tape to the poor suffering tissue, which would do so much better if left alone. Even such a simple application as calamine lotion is bound on with layer upon layer of gauze, and we are indeed fortunate if the dressing is not climaxed with a layer or two of oiled muslin. Compresses which must be kept constantly moist in

*Chairman's address, Dermatology and Syphilology Section, at the Fifty-Eighth Annual Session of the California Medical Association, May 6-9, 1929.

order to be effective, defeat their purpose by being allowed to dry upon an oozing surface and so aggravate the original condition when they are removed.

It is a relatively simple matter when dealing with one private patient to instruct the nurse as to a given application, but in hospital wards the nurse who is on duty in the morning is gone in the afternoon, and within a week one or two new ones may appear.

I venture the opinion that we do not quite measure up to our obligations in this respect. Many of us give lectures to nurses in training schools. If we will accentuate the teaching of the art of applying dermatologic remedies it will be of help. If dermatologists will unite upon a standard technique so that the California trained nurse may have a better idea of what is expected of her in our specialty, we shall be taking a forward step. May I suggest that for next year's meeting someone be designated to prepare a paper upon this subject. After a full discussion of this paper we should have a good digest of our collective sentiment, which will be of value to the public, to the nurses, to our patients, and to ourselves.

350 Post Street.

HEART-BLOCK—COMPLETE, COMPENSATED*

REPORT OF CASES

By J. MARION READ, M. D.
San Francisco

DISCUSSION *by Verne R. Mason, M. D., Los Angeles; John J. Sampson, M. D., San Francisco.*

HEART-BLOCK, of any kind or degree, denotes damage to vital structures and usually heralds persistent invalidism or early demise. As a rule the block is but one manifestation of extensive myocardial damage, such as occasionally follows diphtheria or more frequently occurs in chronic cardiovascular sclerosis. With an impaired myocardium, the advent of heart-block, besides serving as an indicator of the extent of the damage, is apt to add to the difficulty of maintaining compensation. For these reasons heart-block is regarded as a portentous sign in cardiac disease.

But there are exceptional cases where the conduction bundle seems to have suffered a severe injury by some nonprogressive pathological process which spared the general myocardium, or from which the latter recovered. A severe injury in these cases is surmised because the block is complete, and an undamaged muscle is assumed because complete compensation for ordinary life is maintained for several decades. In fact these cases of compensated, complete heart-block are usually discovered when the individual presents himself for some irrelevant condition and the physician's curiosity is aroused by the persistently slow pulse.

It is my purpose to report three such cases and try to show how these individuals maintain an adequate circulation with a pulse rate constantly below 50 per minute. I shall also try to draw some conclusions as to prognosis, and the fitness of these individuals for major surgical operations.

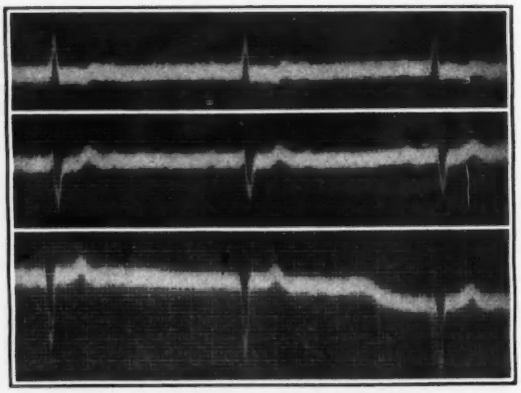

Fig. 1 (Case 1).—Three leads of electrocardiograms taken June 21, 1926. Complete block. Auricular rate, 62; ventricular rate, 30. Left axis deviation.

REPORT OF CASES

CASE 1.—Male, age seventy-eight years. No complaint. His slow pulse had aroused the interest of a doctor friend who referred him for an electrocardiogram. It is not known when his pulse became slow, as the old gentleman, whose memory is not very good, can give no information on this point. I am informed in a letter from the physician who attended him in 1919 during an attack of influenza that his pulse was in the forties at that time and remained so in that and subsequent respiratory tract infections, even though the temperature went to 102 degrees.

There are no symptoms of circulatory insufficiency and he is able to earn a living for himself and wife as a court interpreter. He climbs four flights of stairs without dyspnea and states that his feet never swell.

Physical examination showed a stockily built man, weight 170 pounds, height 66½ inches. Complexion ruddy. Pulse rate, 30; blood pressure, 200/70. No edema of ankles or other signs of inadequate circulation. Systolic murmur at apex and aortic area; thickening of peripheral vessels not noticeable. Pulse very forceful, full and regular, and accelerates six to eight beats per minute on exercise.

Electrocardiogram (June 21, 1926) showed complete heart-block. Auricular rate, 62; ventricular, 30 (Fig. 1).

When next seen, in March 1927, the pulse rate was 38; blood pressure, 174/72. Four months later the pulse rate was 34 to 38 and blood pressure, 216/92. On November 29, 1927, these figures were 34 and 178/82. Another electrocardiogram on this date showed complete block still present, auricular rate 58, ventricular 32.

I visited him at his place of employment on February 19, 1929, and found him in his customary good health. The pulse was regular, very full volume, and

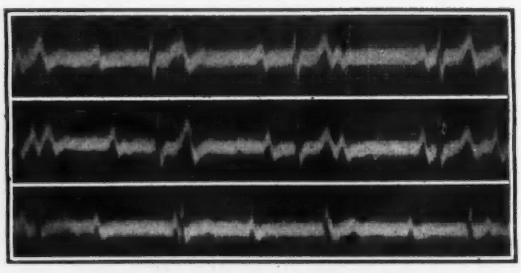

Fig. 2 (Case 2).—Three leads of electrocardiogram. Complete block. Auricular rate, 65; ventricular rate, 45.

* Read before the San Francisco County Medical Society on March 9, 1929.

40 per minute; the blood pressure was 204/68. There was no edema of the ankles and no dyspnea on climbing one flight of stairs.

* * *

Case 2.—Female, age forty-eight years. When six years old she had diphtheria during an epidemic in which three of five children died. Shortly after this she says she turned very blue when surf-bathing. She has known that she had a very slow pulse since her teens, when she was taken to a physician for some other irrelevant complaint. She says at the age of twenty she could dance all night, and now suffers no restriction of activity as she walks, rows, swims, and plays golf, without dyspnea or other signs of circulatory embarrassment. She took an anesthetic at twenty-five years for childbirth.

I first saw her July 28, 1926. Pulse rate, 39; after exercise, 44 per minute. Blood pressure, 180/80. Electrocardiograms revealed a complete heart-block; auricular rate, 60; ventricular, 40 (Fig. 2).

Physical examination showed good color, no edema. Systolic murmur at apex on expiration; also at pulmonic area. When taking the blood pressure there was observed a variation in the force of the beats; also on auscultation there was noted a difference in the sound quality of successive beats.

She was seen again on April 13, 1927, and reported she had enjoyed her usual good health during the intervening nine months. The pulse rate was 39 to 41, and there was still the definite variation in the force of the heart-beat. Careful study of the blood pressure, reading the systolic pressure by palpation and auscultation, revealed that some of the contractions raised the pressure to 170 to 174 millimeters, while other of the contractions registered only 144 to 150 millimeters. The diastolic pressure was 74 millimeters.

In September 26, 1927, I read the blood pressure as 190/84, and another physician read 194/86. Four days later the systolic pressure varied from 140 to 156 with a diastolic pressure of 76. The pulse rate of 44 per minute was reduced to 41 by breath-holding.

She was last seen on February 28, 1929, and reported her general condition excellent as usual. The pulse rate, seated, was 41 per minute, and the diastolic pressure, 78. The systolic pressure varied from 160 to 174.

* * *

Case 3.—Male, age sixty years. Measles and typhoid fever in childhood. In 1890, æt. twenty-one years, had a chancre followed by secondary skin lesions. He has been treated at intervals for the past ten to twelve years with iodids and mercury, and has received seven injections of salvarsan. The Wassermann reaction has never been positive. Wife and three children are healthy.

In 1903, æt. thirty-five years, he had pneumonia during which his heart rate dropped to 40-42, and he was told by his physician, the professor of medicine in a large medical school, that his heart was very seriously affected and that he could expect to live only a few days. He had noticed some pulse irregularities occasionally, but says that since then his pulse has remained constantly regular and slow. He is now

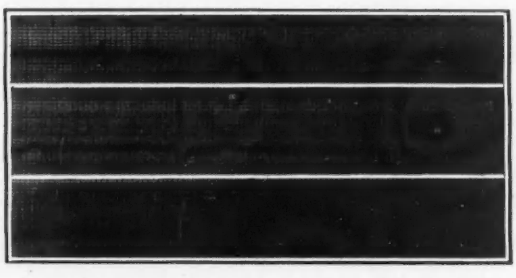

Fig. 3 (Case 3).—Three leads of electrocardiogram taken January 13, 1922. Complete block with auricular fibrillation. Ventricular rate, 45.

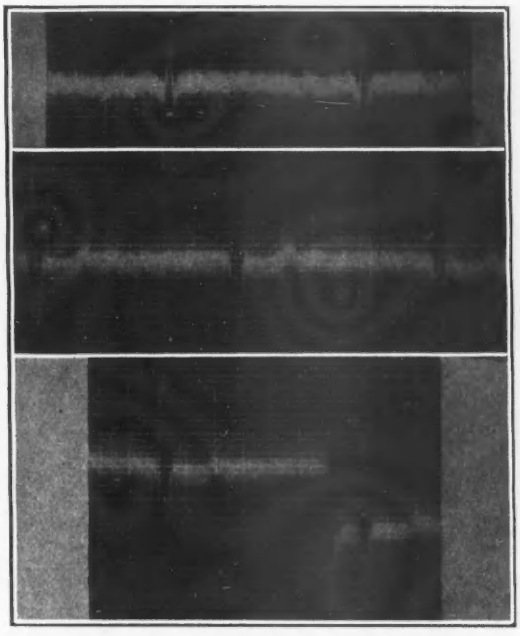

Fig. 4 (Case 3).—Three leads of electrocardiogram taken October 13, 1922. Complete block with auricular fibrillation. Ventricular rate, 45.

slightly dyspneic on exertion, and at times there is a little edema of the legs.

In 1919 he developed manifestations of a renal stone, confirmed by roentgen ray in 1922, and was referred to a physician for opinion regarding the ability of his heart to carry him through a major operation. Examination then showed considerable arteriosclerosis, enlarged heart, soft, blowing systolic murmur at apex and toward sternum; heart sounds of good quality. Pulse rate, 44, regular. Blood pressure, 145/70.

An electrocardiogram taken January 13, 1922, showed complete heart-block with auricular fibrillation and slight right axis deviation (Fig. 3).

While under observation for two months there were râles constantly present at both lung bases, and he showed coupled beats after test exercises or when the stomach was distended. It is recorded that one of the beats was "at a pressure of 145 and the other 90."

In October 1927, the renal stone again caused pain and the genito-urinary surgeon referred him to another specialist for his opinion. The clinical records at this examination confirmed the observations given above. Pulse rate, 42 to 46; blood pressure, 185/70.

An electrocardiogram on October 13, 1927, showed the same conditions present as in January, 1922. (Fig. 4.)

The renal stone later became lodged in the ureter and the resultant infection in the kidney necessitated its removal, so he reëntered the hospital May 25, 1928, where he continued to run a fever to 104 with a pulse rate from 45 to 74. The abscessed kidney was removed May 30, and he made an uneventful recovery. The pulse was 42 to 56, and an electrocardiogram taken June 20, 1928, showed auricular fibrillation and complete block still present, ventricular rate 45.

COMMENT

Clinically these cases are interesting from the viewpoint of etiology, long duration, physical findings, and the absence of any attacks suggesting Stokes-Adams syndrome.

The date of onset is known definitely only in Case 3, for in all probability he has had complete

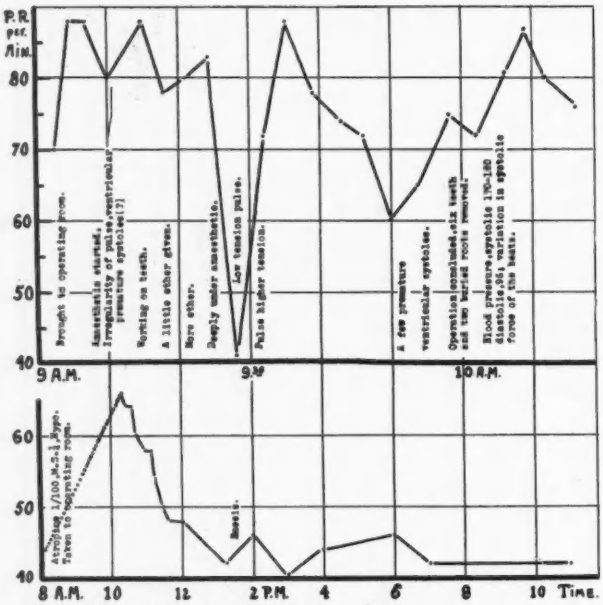

Fig. 5 (Case 2).—Upper chart shows pulse rate during general anesthetic. Time of pulse readings and notations approximate. Lower chart shows pulse rate for twelve hours in hospital following operation. Dotted portion represented in detail in upper curve.

heart-block since 1903. But the etiology is less certain, the most evident cause being the syphilitic infection contracted thirteen years prior, although there are no other signs of tertiary syphilis and treatment has been active since the onset. There is considerable arteriosclerosis present now, but it does not seem probable that this was the cause of his heart-block with its onset, æt. thirty-four years. It is more probable that an acute infection (pneumonia) (Frommel and Thevenod,[1] Porter[2]) was the etiologic agent. A definite diagnosis of pneumonia cannot be confirmed from clinical records, as the physician who attended him at that time has been dead many years.

In Case 2 the date of onset is not so definitely fixed nor can we be certain that diphtheria (æt. six years) was the cause. Any degree of block in diphtheria usually terminates fatally. In the literature I was able to find only two (White and Jones,[3] Parkinson[4]) cases of heart-block occurring during diphtheria from which the patients recovered. One of these was a girl, two or three years old, who had diphtheria in 1907 and on the third day developed a high grade of heart-block. This persisted, and electrocardiograms nine and twelve years later showed complete auriculoventricular block with ventricular rate 40 to 50. In 1926, nineteen years after having diphtheria, the complete block was still present though she felt perfectly well. Such instances are rare, however, for Jones and White[3] in a recent electrocardiographic study of one hundred cases of severe and moderately severe diphtheria could find no cases of heart-block five to ten years after the infection.

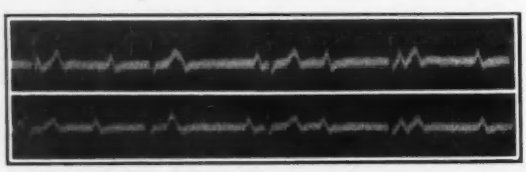

Fig. 6 (Case 2).—Electrocardiograms, both Lead 2. The upper taken before and the lower after 1/100 grain of atropin subcutaneously. No change in either auricular or ventricular rate.

Despite its rarity the most probable cause of the block in Case 2 is, in my opinion, diphtheria. As it has existed since childhood there is a possibility that we have here a case of congenital block. But this does not seem likely, as there is no other evidence of congenital cardiac malformation, which is usually part of the picture accompanying congenital block. The slow pulse was not definitely observed by physicians until she was about fifteen years of age.. But attributinging the slow pulse then noted to the same cause which now produces her bradycardia, we can be reasonably certain that this woman has had heart-block, probably complete, for over thirty years.

In Case 1 there is not even a probable cause of auriculoventricular dissociation revealed in the history. In this patient the pulse rate has been in the neighborhood of 40 per minute for the past ten years, and from electrocardiographic studies it is established that this bradycardia is due to complete heart-block, which has been present for the past two and a half years. During this time he has apparently suffered no restriction of activity. His wife says that at night sometimes "his breathing stops and then there is a struggle before it begins again." This may be a laywoman's description of Sheyne-Stokes breathing, which Mackenzie[5] (page 274) says sometimes occurs in heart-block, but which is not uncommon at night in cerebral arteriosclerosis. This observation and the patient's age suggests arteriosclerosis as the cause of the heart-block despite the absence of evident sclerotic changes in the peripheral vessels.

HEART SIZE

All of these individuals have enlarged hearts (Table 1), and this seems true of all cases of complete compensated heart-block in the literature of which heart size is recorded. A case of Smith's,[7] for which comparable data are published, is added in Table 1.

MURMURS

All these patients had apical systolic murmurs which were heard also toward the sternum and the aortic area in one case. Systolic murmurs are reported as present in the cases of Smith,[6] Wilson and Robinson,[7] Aub and Stern,[8] Wilson,[9] Musser,[10] and numerous other clinicians who have written upon complete heart-block.

STOKES-ADAMS SYNDROME

As already noted, none of these three individuals report any spells of syncope, which are

so frequently a part of the clinical picture of heart-block. In fact the high incidence of syncope in heart-block has led many writers to use "Stokes-Adams disease" as a synonym for heart-block, though it would seem advisable to reserve the former term for those cases with syncope (Griffith [11]).

It is inferred from the absence of Stokes-Adams syndrome in my cases that the block in each instance was complete from the start and has remained so. The syndrome is more frequent when the block is incomplete or intermittent, and the ventricle remains at a standstill in the periods of transition from one rhythm to another. Syncope may occur with complete block, however, when the ventricular rate falls below twenty per minute (Wilson [9]). Its absence in complete block has been noted by others.[7]

Carter and Howland,[12] in reporting a case of congenital complete block and commenting upon seven others collected from the literature, say: "Perhaps the most significant feature in this small series of cases is the absence of any history of grave syncopal attacks. . . . It would seem apparently that, as a result of the congenital nature of the lesion, the heart early acquired the power of adapting itself to the constant load necessary to maintain an efficient circulation."

TABLE 1.—*Heart Size, Determined by Teleroentgenogram, in Cases of Heart-Block*

	Case			Case of S. C. Smith
	I	II	III	
Heart				
From median line to Left border	9.0	11.5	13.0	
Right border	3.7	4.5	7.0	
Total transverse diameter	12.7	16.0	20.0	13.0
Longitudinal diameter	14.6	16.5	19.0	
Aorta				
From median line to Left border	3.9	4.4	3.5	
Right border	2.6	2.6	1.5	
Total diameter	6.5	7.0	5.0	
Internal diameter of chest	25.6	29.5	28.3	25.0
Cardiothoracic index	0.50	0.54	0.70	0.52

BLOOD PRESSURE

All three of my patients had elevated systolic and normal diastolic pressures, which seem to be the usual findings in compensated complete block. Musser [10] also called attention to this finding in an article entitled "Heart-Block Associated with High Blood Pressure," and, in reviewing the literature of heart-block from 1904 to 1916, cites fifteen articles reporting nineteen cases with systolic pressures ranging from 196 to 270. Two of these nineteen patients, like one of Musser's, had a lower systolic pressure in intervals between periods of block.

A high systolic and normal diastolic pressure seem to be definitely associated with the condition of complete block, or at least are characteristic during compensation. Furthermore, it seems that the resulting large pulse pressure is physiologically related to the maintenance of an adequate circulation with a very slow rate of ventricular contraction. Suggestive of this are the blood pressure readings in the same individuals at different times with and without block. Two cases are reported (Carter and Dieuaide,[13] and Feil [14]) in which, at the advent of complete block, the pulse pressure increased 20 millimeters or more above the value obtaining during normal conduction.

In addition to this constant compensatory alteration of the blood pressure in complete compensated heart-block there are other adaptations, the study of which throws some light upon certain phases of cardiodynamics. The two nonfibrillating patients in this series have been studied with the aid of the polygraph and roentgen kymograph and observations made which will be reported elsewhere.

But aside from the questions of cardiodynamics and the physiology of circulation which these studies precipitate, there are practical aspects of these cases which demand recognition from every practitioner of medicine. First, it must be recognized that the heart showing complete block may function remarkably well for many years and efficiently maintain a circulation adequate for ordinary life. Secondly, this presumably handicapped organ can even sustain an individual through the stress of major operations.

SURGICAL RISK

The question sometimes arises, as in Case 3, whether or not an individual with complete heart-block can take a general anesthetic. The woman of Case 2 took an anesthetic at childbirth without ill effects at the time; or subsequently, as her comfortable existence the past twenty years testifies. In July 1927, she was advised to have two roots and six teeth removed, and the dental surgeon wished her to take a general anesthetic. It was my opinion that it would be safe, and a gas-oxygen-ether anesthetic was employed. I was present throughout the operation and took frequent readings of the pulse, which was always regular and slow (Fig. 5). It reached as high as eighty-eight beats per minute, so the question arose as to whether the atropin (grain 1/150) with morphin given in preparation could have abolished the block. To settle this point she was given atropin (grain 1/100) by hypodermic injection and electrocardiograms taken before and after its administration (Fig. 6). No change in either auricular or ventricular rate was produced, though one might expect auricular rate to be accelerated. Barring some unlikely possibilities, one reaches the conclusion that excitement and the anesthetic may have increased the ventricular rate, though MacKenzie [5] (page 274) states: "Causes of excitement and the administration of alcohol or chloroform have very slight or no effect on the

ventricle though the auricular contractions may be rendered much more frequent."

No electrocardiograms could be made at the time of operation, as the hospital where it took place was not equipped with an electrocardiograph.

Only one comment upon surgery in these patients was encountered in the literature. Hamilton, in discussing a case reported by McIntosh,[15] says that he had seen a woman known to have heart-block for eighteen years "associated with hypertension" who had successfully passed through two major operations, one for gall stones and the other a hysterectomy.

In Case 3 of this series surgery was twice advised against because of the evidences of myocardial incompetency present at times and because the heart-block is associated with auricular fibrillation. But the ability of this heart to carry its owner through a major operation was later demonstrated. It seems, therefore, when the myocardium is able to maintain an adequate circulation, heart-block, *per se*, is no contraindication to major surgery, as appears from the case cited by Hamilton and Cases 2 and 3 of this series.

COMPLETE HEART-BLOCK AND AURICULAR FIBRILLATION

Since the patient of Case 3 has auricular fibrillation and at times shows evidence of decompensation, one wonders if, in such a case, the complete block has not afforded some compensation for the fibrillation. This probability has been pointed out by Bishop,[16] whose patient, a man of seventy-seven years, was able to attend to business although he had fibrillated for over eight years, but had not required digitalis. Mackenzie[5] cites three cases with auricular fibrillation and heart-block.

PROGNOSIS

It is evident from Cases 1 and 2 that complete heart-block is compatible with a normal existence and complete freedom from symptoms of cardiac failure. It has probably existed in Case 1 for over eight years and in Case 2 for over forty, although graphic evidence of heart-block in each case exists for only about two years and a half. The patient of Case 3 has undoubtedly had block for twenty-six years, and we produce graphic proof of its existence (with auricular fibrillation) for over six and one-half years. This patient is not completely compensated, but has led a fairly comfortable and useful life for over a quarter of a century.

The literature contains records of a number of individuals who have lived comfortable lives for many years with complete block—for example, Hamilton's[15] patient with complete block for eighteen years. Mackenzie[5] mentions "a case described by Keith in which there was a history of heart-block for eighteen years." He also mentions another (Case 77 in the appendix), twenty-four years of age, whose block occurred æt. five years, pulse rate of 42 to 43, with enlarged heart and systolic murmur, who was able to indulge in as strenuous a sport as tennis. Lewis[17] mentions a man thirty-three years of age who was perfectly compensated with complete block for fifteen years.*

There are numerous cases recorded of patients who have lived for four or five years with known block. Dr. A. L. Bloomfield in a personal communication tells of a woman first seen in 1912, æt. seventy-two years, with pulse rate of 48, which rate still obtained in 1916 before death. Incidentally her blood pressure was 240/95 in 1916 and 260 systolic in 1912, when diastolic pressures were not being read.

White and Viko[18] report that of twenty-four cases of complete heart-block they were able to follow, "nine cases were 'well' or in 'fair condition' though still showing heart-block when last noted, from one to seven years after the first record of the complete block. Of these nine, five had survived over five years, four of them being the four cases under forty years of age."

They further say, "Less than one-quarter of the cases of complete auriculoventricular block showed heart failure, either anginal or congestive, at the time of discovery; and also less than one-quarter gave a history of Stokes-Adams attacks." Their records show that complete auriculoventricular block is a far less serious condition than intraventricular block although it carries a higher death rate than partial block.

Griffith[11] in a Schorstein lecture says: "When the block has been complete for some time and the ventricle has found itself, there may be a great increase in the comfort of the patient and long life may follow."

Sir James Mackenzie[5] summarizes prognosis in complete heart-block as follows: "The condition of the heart muscle, as shown by its efficiency, is the chief element in prognosis." One cannot, therefore, agree with Smith[6] in his prognosis in the case of the youth of twenty years who was accidentally discovered to have complete block. Age seems to be a factor also; the younger the patient at the onset of block the better the prognosis, providing a fatal issue can be avoided for a time. Also the faster the idioventricular rate the better seems the outlook for a comfortable existence.

490 Post Street.

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DISCUSSION

VERNE R. MASON, M. D. (523 West Sixth Street, Los Angeles).—Doctor Read has emphasized in this paper the importance of attempting to determine the ability of the heart to stand strain in the presence of an arrhythmia. Such observations are of great importance and can only be gained in medical practice where patients can be followed carefully over long periods of time. In the study of arrhythmias the importance of the results of instruments of precision has been overemphasized and attempts to determine the nature, extent, and severity of the underlying lesion have been much neglected. It is important, of course, to know the disturbance of rhythm, but it is of far greater value to know how much strain the heart with such arrhythmia can stand. Doctor Read has limited his report to the latter phase and has abstracted the reports of previous workers and added new observations. The point of view of the author is to be commended highly.

✠

JOHN J. SAMPSON, M. D. (490 Post Street, San Francisco).—These three patients of Doctor Read serve as excellent examples of the necessity of using all the clinical data to determine a prognosis, rather than any single finding.

We are accustomed to associate such lesions of the conduction system as bundle branch block or complete auriculoventricular heart-block with generalized cardiac damage, and, necessarily, a grave prognosis.

Just such cases as these warn us that isolated conduction system lesions are possible, and may not be associated with general myocardial damage, and therefore warrant reserve in predicting the patient's future.

I believe that we shall become more conscious of such broad possibilities of the circulatory system adapting itself to mechanical defects, whether in valve damage or rate or rhythm disturbances, as here illustrated in the slow rate of heart-block. Presumably this adaptation is largely due to stroke volume output.

I feel we shall shortly be using schemes of stroke volume output measurement to determine the efficiency of cardiovascular and possibly of the tissue and lung gas exchange mechanisms in ordinary clinical conditions.

BRACHIAL PLEXUS BLOCK ANESTHESIA

ITS ADVANTAGES IN THE TREATMENT OF FRACTURES OF THE ARM

REPORT OF CASES

By J. E. STRODE, M. D.
Honolulu, T. H.

COMPARATIVELY few references are made to this method of anesthesia in American medical literature and yet, under certain conditions, it is of inestimable value.

ADVANTAGES OF THE METHOD

It is relatively easy of execution; gives a minimum degree of discomfort to the patient; is attended with little danger if the anatomical surroundings are borne in mind; is successful in the vast majority of cases; and gives relaxation not attained with any other form of anesthesia.

In addition it permits of manipulative procedures being carried out under the fluoroscope under the most favorable conditions. The administration of a general anesthetic in the dark room is accompanied by a number of potential dangers. The anesthetic is administered with difficulty, several assistants are needed, the room is generally small and the possibilities of coming in contact with high-tension wires is a real danger in most fluoroscopy rooms. With brachial plexus block anesthesia, the manipulative procedures can be carried out without undue haste, and the patient, being conscious, may coöperate as necessity requires.

TECHNIQUE

The route of approach to the brachial plexus has been the supraclavicular. Labat's modification of Kulenkanpff's method seems to give the best results, and in general is as described below. The injection is usually made in the sitting position, the head turned toward the opposite shoulder. This gives the best possible exposure and places the brachial plexus beneath the clavicle near its midportion and in a line at about right angles to this bone. The midpoint of the clavicle is determined by bisecting the distance between the acromioclavicular and sternoclavicular articulations. This point, in the majority of instances, lies just lateral to the subclavian artery in a line with the prolongation of the external jugular vein. A wheal of anesthesia is raised one centimeter above the center of the clavicle. A needle of small caliber (0.6 to 0.8 millimeters in diameter and 5 to 8 centimeters in length), disconnected from the syringe, is directed toward the spine of the second thoracic vertebra and in the direction of the first rib, while the index finger of the opposite hand retracts the subclavian artery mesially. At a depth of 2 or 3 centimeters the deep cervical fascia is penetrated and paresthesias are

Fig. 1 (Case 1).—Before reduction.

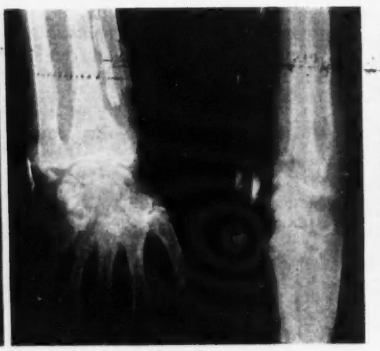


Fig. 2 (Case 1).—After reduction.

generally elicited by the needle coming in contact with one of the cords of the brachial plexus, the most frequent one being referred down the forearm to the little finger. Ten cubic centimeters of 2 per cent novocain solution containing adrenalin is injected in this location. A second deposit of five cubic centimeters of the solution is made in the vicinity of the tubercle of Chassignac (transverse process of the sixth cervical) by partially withdrawing the needle and redirecting it upward toward the finger of the operator's left hand, which orients this tubercle. The third injection of five cubic centimeters is made along the lateral margin of the first rib behind the clavicle.

If paresthesia is not obtained, contact with the rib is made, the needle slightly withdrawn and the initial injection made. Introduction of the needle on the mesial side of the rib to a depth greater than that to which contact with the rib was made, is to be strictly avoided in order to prevent puncturing the dome of the pleura. The introduction of from 20 to 30 cubic centimeters of the novocain-adrenalin solution at the site of the primary injection will give satisfactory anesthesia in the majority of cases. The advantage of Labat's modification is that it takes care of the unusual types of brachial plexus formation.

The anesthesia obtained after blocking the brachial plexus is not complete in the upper arm. A zone of hyperalgesia is left over the shoulder due to the descending branches of the cervical plexus and along the inner side of the arm from the intercostohumeral nerves joining the lesser internal cutaneous nerve. To make the anesthesia complete it is necessary to make subcutaneous injections along the clavicle and acromion and to infiltrate the axilla fanwise along the thoracic wall. Livingston and Wertheim[1] have warned against producing paresthesias, but so far we have experienced no unfavorable results; and when obtained, the anesthesia seems more complete, due to depositing the anesthetic fluid in the closest proximity to the nerve trunks.

Anesthesia is usually complete in ten minutes and lasts from one to two hours. It may be repeated if necessary; as occurred in one case in which a tedious dissection with resection and anastomosis of tendons of the forearm was necessary because of an advanced tuberculous tenosynovitis.

The description of this technique and similar procedures, as described by Labat in his textbook, is so clear and lucid that his work is invaluable to anyone interested in the field of regional anesthesia.

INDICATIONS

The principal indications for this method of anesthesia come under two subdivisions: (1) Any condition in which a general anesthesia is contraindicated, such as shock, heart lesions, advanced age. (2) Cases in which reduction of the fracture should be carried out under the fluoroscope.

The advantages of using the fluoroscope are not generally appreciated. It should be employed in all fractures in which reduction is not dependent on continuous traction. Surgeons frequently are unwilling to devote the necessary time and patience to secure the proper anesthesia or to accommodate their eyes to the dark room so that they can see the fracture well under the fluoroscope. So they acquire the idea that fluoroscopy is of little aid. There are probably no conditions treated by the profession at large which are followed by so many bad results as fractures, and it is only by the most painstaking care at the time of reduction and afterward that good results can be assured. It is a well-established fact and one frequently lost sight of that the earliest possible reduction is attended by the greatest success.

The practice of inducing anesthesia by injecting large amounts of anesthetic solution about the site of a fracture should be condemned. It invites the

Fig 1 (Case 4).—Lateral view before reduction.

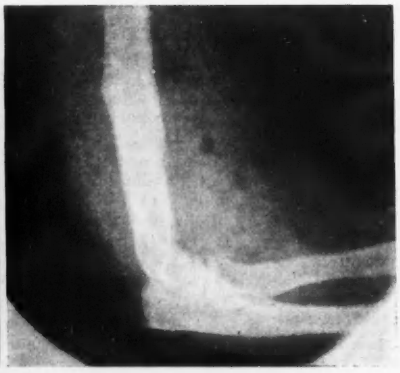


Fig. 2 (Case 4).—Lateral view eleven months after fracture.

Fig. 1 (Case 3).—Before reduction.

Fig. 2 (Case 3).—After attempted reduction under nitrous oxid.

Fig. 3 (Case 3).—Eight months after reduction.

possibility of introducing infection, it may lessen the resistance of already partially devitalized tissues, it is not applicable in compound fractures and does not give the necessary relaxation of muscles so necessary for proper reduction of the majority of fractures. Injection of nerves about the elbow may be used for fractures below this point though it is not so easily carried out nor the anesthesia so universally successful. It is at times useful as a supplement to an incomplete brachial plexus block. In fractures below the wrist, blocking of the nerves about this joint gives very satisfactory results; also blocking at the base of the fingers for fractures involving the phalanges.

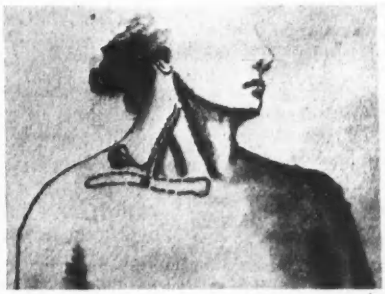
CONTRAINDICATIONS

There seems to be no real contraindication to the method itself. In a thousand cases collected from the literature by Livingston and Wertheim, no permanent untoward results were recorded. The most serious complication was an occasional transient paralysis of the forearm which cleared up without treatment. The method may be difficult to use at times in the highly nervous, though a preliminary injection of morphin or scopolamin with reassurance from the operator, will do much to overcome this difficulty. It should not be attempted in children too young to cooperate, or in the very occasional patient where there is an idiosyncrasy to the drug. The advisability of doing bilateral block may be questioned, on the ground that it might produce paralysis of the phrenic nerves. In the one patient in whom this was done by us for amputation of the forearms, no unfavorable results were noted.

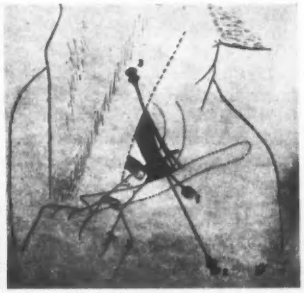
REPORT OF CASES

The following are a few of the cases in which this method has been successfully used for fractures. It has also been very successfully used for all types of operative work such as amputations, nerve sutures and infections:

Case 1.—Female, age 80, received a Colles' fracture with resulting impaction and displacement. Re-



Technique 1.—Showing superficial landmarks, center of clavicle and external jugular vein. Location of wheal and direction of needle for first injection.



Technique 2.—Deeper structures. Subclavian artery being retracted mesially, relationship of brachial plexus to first rib, clavicle and subclavian artery. Needles 1, 2, and 3 in position for injection, as described in text.

Fig. 1 (Case 2).—Before reduction.

Fig. 2 (Case 2).—After reduction.

Fig. 3 (Case 2).—Lateral view after reduction.

duction was carried out under the fluoroscope under brachial anesthesia. The advanced age and feebleness of this patient seemed to make this form of anesthesia particularly desirable.

* * *

CASE 2.—Korean, age 42, was injured on the island of Molokai by having his arm caught in the wheel of a truck. He was seen forty-eight hours later. At this time the examination revealed a supracondylar fracture of the left humerus, with posterior and upward displacement of the lower fragment. Brachial plexus block was induced and reduction carried out under the fluoroscope; a cast being applied. The absence of all pain, the complete relaxation, the ability to see when reduction was complete, and with the assistance of only an orderly, made the brachial anesthesia the method of choice in this case.

* * *

CASE 3.—Female, age 52, had a Colles' fracture of the right arm. An x-ray shortly thereafter showed comminution of the distal fragment with displacement upward and anteriorly. An attempt at reduction was made under nitrous oxid-oxygen anesthesia, but x-ray showed an unsatisfactory result. The brachial plexus was then anesthetized and reduction carried on under the fluoroscope. The ease with which the fragments were replaced under the guidance of the eye, with complete relaxation, was in marked contrast with the first attempt. Examination eight months later showed very little loss of function, and the only complaint from the patient was that the hand was somewhat weaker than previously.

* * *

CASE 4.—Female, age 28, received a comminuted fracture of the humerus above the right elbow joint. Under brachial block anesthesia a Steinman pin was inserted over the olecranon process internal to the insertion of the triceps tendon. This was carried out in the surgery and the patient removed to her room, where the traction apparatus was applied. Due to the patient's excessive weight, 280 pounds, and general physical condition, a general anesthesia was not considered advisable. The comfort enjoyed by the patient after the onset of anesthesia, was in marked contrast with the preceding writhing agony. With the patient's coöperation the entire procedure was made much easier and there was no disturbance of the apparatus afterward, as not infrequently occurs during the recovery period from a general anesthetic. The function of the arm has been completely regained.

CONCLUSIONS

The simplicity of the technique and the value of the coöperative aid of the patient are illustrated in these cases, and lead me to conclude:

1. Brachial block anesthesia is the method of choice in all cases in which a general anesthetic is not mandatory.

2. From a perusal of the literature, brachial plexus anesthesia is a method receiving less use by American surgeons than its merits would seem to warrant.

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THE STIMULATING EFFECT OF CARBON DIOXID INHALATIONS IN DEMENTIA PRAECOX CATATONIA*

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IN November 1928, at the suggestion of Dr. A. S. Loevenhart and Dr. Ralph M. Waters of Madison, Wisconsin, we undertook to determine whether or not we might confirm the results being obtained by them in association with Dr. W. F. Lorenz,[1] and others, in inducing, by carbon dioxid inhalations, brief periods of mental lucidity in patients suffering with catatonic dementia praecox. With the coöperation of Dr. Milton Lennon, Dr. Richard Harvey, Dr. C. W. Mack, Dr. E. W. Mullen, Dr. J. A. Cutting, and others, we conducted eight trials on five male patients, the protocols of which are included herewith.

METHOD OF ADMINISTRATION

The patient was approached with as little commotion as possible, and observations on pulse, respiratory rate, and blood pressure were made. The anesthetic mask was then carefully adjusted, with words of reassurance to the patient (whether he seemed to comprehend them or not), and while he was permitted to breathe air through the mask for some moments, the pulse, respiratory rate, and blood pressure were again observed. A concentration of 5 to 10 per cent carbon dioxid with the balance oxygen was then admitted for the patient to breathe, and increased to 20 per cent or higher within sixty seconds. This greatly augmented the depth of respiration and the height of the blood pressure. With the beginning of muscular movements, attempts at phonation, or the opening of the eyes, usually within two minutes after starting the carbon dioxid administration, the mask was removed and an attempt made to engage the patient in conversation.

It is our opinion that careful approach to the patient, with due regard for his psychic condition, is an important factor in achieving some degree of success with this technique.

CHARACTER OF RESPONSE

Respiration was increased in rate and depth, but when the mask was removed it returned to a normal condition within a few minutes. After the removal of the mask it frequently seemed to be of that jerky character sometimes noted when strong mental excitement is present in a normal person.

The systolic blood pressure rose rapidly to a maximum, usually above 200 mm. Hg., a minute

* From the Department of Pharmacology and the Anesthesia Division of the Department of Surgery of the University of California Medical School. Dedicated to the memory and inspiration of Dr. Arthur S. Loevenhart (1878-1929).

or so after the mask was removed. It then fell rather slowly, returning to the normal level within ten or fifteen minutes. The diastolic blood pressure did not rise so rapidly nor proportionally so high as the systolic. These reactions of the blood pressure to carbon dioxid inhalations were noted in normal animals and humans by Leake and Waters.[2]

The pulse rate, in most instances, rose upon administration of the carbon dioxid, and tended to remain higher than normal for some time after withdrawing the mask. In other cases it fell within ten minutes to below the normal rate.

Upon administering carbon dioxid the pupils dilated, although the normal size returned soon after the inhalation was stopped. The muscles lost their characteristic rigidity and fixation soon after the inhalation of carbon dioxid began. Muscular relaxation was followed by movements, which at times seemed convulsive. These stopped upon withdrawing the gas, when voluntary muscular activity of an apparently normal sort could be elicited. Within a few moments volition was lost and the characteristic cataleptic condition gradually returned. The convulsive effects in normal animals and humans of carbon dioxid inhalations were also observed by Leake and Waters.[2]

These physical phenomena varied considerably in different individuals and on different trials on the same patient. The extent and duration of these effects seem to have some relation to the concentration and amount of carbon dioxid inhaled, although our small number of trials prevents us from drawing definite conclusions.

The mental reactions in these patients to carbon dioxid inhalations are interesting, and, as in the case of the physical phenomena, seem to have some relation to the concentration and amount inhaled. This may be seen from the protocols of three trials on the same patient (V. H.). In a favorable reaction the blank facial expression changes to one of excited intelligence. The eyes open and, losing their dull stare, become keenly animated. Contrary responses to suggestion disappear as intelligent replies or actions are made to questions or commands. These mental reactions fade away within ten or fifteen minutes and the patient's condition returns to what it was previous to the administration of the gas.

No significant effects on respiration, pulse, blood pressure, or general condition resulted from applying the anesthetic mask and permitting the patient to breathe air through it for some moments. The results, therefore, cannot have been due to unaccustomed breathing, or to excitement incidental to strange voices and manipulations.

COMMENT

Confirmation is herewith given to the preliminary report recently published by Loevenhart, Lorenz, and Waters.[1] To the possible factors involved in the response, which they have mentioned, others may be added.

It has been noted that cases of dementia praecox catatonia may show periods of lucidity after general anesthesia with various agents, and that such lucid intervals sometimes follow the high fever of an acute general infection.[3] Any sufficiently severe general disturbance of metabolism may thus be expected to bring about the reaction noted after carbon dioxid inhalation. The metabolic disturbances in question seem especially to be such as may be reflected in sudden changes in the acid-base balance of the blood. To determine whether or not slower but more prolonged improvement may follow treatment on this hypothesis, ammonium chlorid or thyroid administrations deserve trial.

With the concentrations of carbon dioxid and oxygen used, the arterial blood is quite saturated with oxygen, but the dissociation curve of oxyhemoglobin is considerably depressed, so that oxygen may be expected to leave the blood more readily than it does normally when in contact with the tissues where the oxygen tension is below that in the alveoli. This fact in connection with the greatly increased blood pressure during and immediately after the carbon dioxid inhalation suggests that improving the oxygen supply to the cerebrum may be an important factor in the response.

It will be interesting to determine whether or not a patient's mental and physical condition might be improved by repeated administrations of carbon dioxid with oxygen two or three times a day for a week or more. In such an effort careful attention to the psychological attitude of the patient and a gentle manner of approach may be significant factors in the desired effect.

The taste of the mixture of carbon dioxid and oxygen inhaled is not very pleasant. It might be expedient to offer the patient a mild alkaline mouth wash as soon as the administration of the gases is stopped and the patient's coöperation can be secured.

Care must be taken in administering concentrations of carbon dioxid higher than 20 per cent with the balance oxygen not to induce convulsions or anesthesia. There is probably no great danger in either,[2] but these complications detract from the attention which the operators may give to their task of attempting to obtain the intelligent confidence and coöperation of their psychotic patient. These considerations tend to limit to one or two minutes the period of inhalation of the carbon dioxid mixtures for the purposes here discussed.

SUMMARY

Confirmation is given to the report of Loevenhart, Lorenz, and Waters[1] that brief periods of inhalation of a mixture of 30 per cent or more carbon dioxid with oxygen will induce short periods of mental clarity and intelligent responsiveness in certain cases of dementia praecox catatonia. These mixtures elevate systolic blood pressure to very high levels, stimulate the pulse rate as well as the rate and depth of respiration, and bring about more normal muscular responses. The favorable effects are only of ten to fifteen

minutes' duration, but it is suggested that repeated trial, with careful approach to the patient, may lead to more prolonged beneficial reaction.

University of California School of Medicine.

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3. Personal communications from Dr. C. W. Mack and Dr. E. W. Mullen.

TRIAL 1.—V. H., robust male, age forty-five. Diagnosis: Dementia praecox catatonia of twenty years' duration. Patient found in bed, pale complexion, eyes closed, head elevated above pillow, arms slightly held above blanket. No movement or change of expression on questioning. Lips set. Sometimes showed contrary response on questioning.

Time P.M.	Pulse per min.	Resp. per min.	Systolic Blood Press.	Remarks
2:45	90	18	130	Under "normal" conditions.
2:48	90	24	130	Mask applied to face; breathing air.
2:49	90	0	140	Breathing mixture of 25% CO_2 and 75% O. Stopped breathing as mixture was turned on.
2:50	100	30	168	Deep and violent respiration; eyes open with frightened look; moving left arm and left leg.
2:51	.....	7	205	Pupils dilated; kicking movements of legs. Gas off; breathing air.
2:52	.....	40	170	Violent expirations like escaping steam. Running movements of legs. Expression of fear on face; looks from one to another.
2:53	110	24	140	More quiet; tries to whisper; intelligent expression in eyes.
2:54	.....	20	160	When asked, "Do you know Dr.—?" replies in whisper, "Don't care, don't make any difference."
2:55	.....	36	155	Closes eyes. Arms and head again become cataleptic; returns to condition previous to administration.

TRIAL 2.—V. H. Same subject as in Trial 1. Conditions same as Trial 1.

Time P.M.	Pulse per min.	Resp. per min.	Systolic Blood Press.	Remarks
3:29	114	24	150	
3:30	.....	42	170	Administered 20% CO_2 80% O.
3:31	.....	.....	200	Gas off. Violent expirations like escaping steam; dilated pupil; but little muscular activity.
3:32	120	30	160	Catalepsy in arms and head; squeezed eyes tightly shut on being asked to open them. Condition same as before administration.

TRIAL 3.—V. H. Same subject as in Trials 1 and 2.

Time P.M.	Pulse per min.	Resp. per min.	Systolic Blood Press.	Remarks
4:00	135	27	145	Condition same as noted at beginning of first trial.
4:01	135	15	160	Began administration of 30% CO_2 and 70% O with rapid increase in concentration of CO_2 as subject began breathing.
4:01½	.....	35	210	Pupil dilated; eyes open. Violent rocking movements and jerking motions of left arm and left leg. Subject holds breath and rolls eyes about.
4:02½	85	Irreg.	.....	Gas off. Pupils normal; eyes open. Running movements of legs.
4.03	..... Viol. panting		180	Patient shows extreme psychic excitement. Looks rapidly from one member of the group to another with keen intelligent expression on face. No catalepsy present.
4:04	90	50	.....	Patient smiles broadly. Attempts to talk. Replies emphatically, "Yes, sir" to question, "Want some ice cream?" On being asked, "Which is Dr.—?" indicates by smile and turning eyes and head. Similarly recognizes another physician, and continues to answer questions.
4:06	90	20	150	Patient closes eyes; arms fall by gravity but catalepsy returns and patient quickly reverts to condition before administration.

TRIAL 4.—L. I., robust male, twenty-four years old. Diagnosis: Dementia praecox with catalepsy present for one and one-half years. Long history of neurasthenia. Found sitting in chair with mouth drooling; eyes fixed but open, and skin rather flushed. Response to commands, such as "Stand up" or "Lie down," but is mute.

Time P.M.	Pulse per min.	Resp. per min.	Systolic Blood Press.	Remarks
3:10	90	18	134	Face without expression as mask is applied
3:11	98	.....	145	Mixture of 25% CO_2 and 75% O administered. Respiration becomes very deep and violent. Patient immediately stares about with an intelligent expression; makes violent voluntary movements and pushes mask off, shouting "Take that away."
3:13	96	25	155	Answers "Yes" to question, "Do you know where you are?" Struggling ceases.
3:14	90	25	155	Patient quiet; eyes fixed and face without expression.
3:15	.....	.....	155	Administered 10% CO_2 and 90% O. Immediately threw mask off with violent movement and nearly jumped out of bed.
3:16	100	30	168	Incoherent efforts to talk, promptly reverting to condition previous to administration.

An attempt later to anesthetize this patient with ethylene before the administration of carbon dioxid was unsuccessful because of the patient's struggles on applying the mask.

TRIAL 5.—I. G., muscular male, age twenty-five. Diagnosis: Catatonic dementia praecox of six months' duration. Lies in bed in catatonic stupor; mute; must be fed; eyes open but staring; muscles partially tensed; skin slightly pale; lips partially cyanotic.

Time P.M.	Pulse per min.	Resp. per min.	Blood Press.	Remarks
1:30	66	18	122/98	Observations made by doctor to whom patient is accustomed. No one else in room.
1:35	70	18	120/94	Observations made with staff in room. Patient looks fearfully from one to another.
1:36	....	....	130/108	Pure oxygen administered from face mask after reassuring word and careful approach of anesthetist
1:37	76	18	130/112	30% CO_2, 70% O administered.
1:38	80	20	130/108	Deep powerful respirations; holds muscles rigidly.
1:39	100	....	190/110	Gas off and face mask removed. Patient panting and looking anxiously about.
1:40	140	24	210/110	To question, "How old are you?" answers "Twenty-five." Q. "Do you want more?" A. "No."
1:41	80	....	190/110	Answers rationally to continued questioning. Attempts spontaneous remarks but fails to make himself understood. To question, "Did it hurt?" answers "Just a little." Sticks out tongue on request. To question, "Did your bowels move today?" answers "No, sir."
1:42	80	18	170/120	Muscles become rigid again; patient looks anxiously around. To question "Do you want us to come back?" answers, "Yes, sir."
1:43	80	....	150/106	Continues to look anxiously around but with increasing difficulty.

TRIAL 6.—I. G. Same subject as in Trial 5.

Time P.M.	Pulse per min.	Resp. per min.	Blood Press.	Remarks
2:27	90	30	142/98	Breathing through mask.
2:28	100	....	150/100	Administering 30% CO_2 and 70% O. Patient holds breath.
2:29	110	38	164/110	Deep respiratory stimulation.
2:29½	120	52	190/110	Mask removed. Patient coughs and laughs. Muscles are relaxed. Attempts to smile.
2:31	124	36	200/130	To question "Feel any better?" emphatically replies, "Yes." Q. "How did that taste?" A. "Not very good." Q. "Make you feel good?" A. "A little."
2:33	100	28	170/110	Patient spontaneously talks: "I was thinking. I have been thinking a lot." Q. "What have you been thinking of?" A. "Of going up." Points to ceiling light and indicates it with eyes. "A bell but doesn't ring. Been thinking why." Continues to respond intelligently to questions.
2:38	72	24	150/100	Patient's complexion becoming pale; muscles more rigid and frightened look comes back into eyes.

TRIAL 7.—G. S., male, age nineteen. Diagnosis: Dementia praecox catatonia, six months' duration. Patient is up and dressed; eyes are open but staring; untidy in dress; mute; muscles rather rigid; eats alone.

Time P.M.	Pulse per min.	Resp. per min.	Blood Press.	Remarks
2:00	78	16	126/96	Observations made by physician to whom patient is accustomed. No one else in room.
2:05	78	16	130/94	Normal observations made after whole group is in room with patient. Patient shows no anxiety or apparent fear.
2:06	74	....	122/92	Administering pure oxygen from mask.
2:07	70	18	126/90	Administering 30% CO_2 and 70% O.
2:08	90	30	134/100	Deep respirations; skin flushed; pained look in eyes.
2:09	100	38	160/108	Mask removed from face. Patient still breathing deeply. No response to questioning.
2:11	96	20	140/100	No response to continued questioning. Patient sticks out tongue on request but shows no other favorable response.
2:12	80	30	130/106	Administering 30% CO_2 and 70% O.
2:13	96	30	162/110	Deep respiration; muscles become rigid; protesting look in eyes; mask removed.
2:14	100	38	156/112	To question, "Want any more?" distinctly answers "No." Whispers but cannot make himself understood.
2:16	80	22	148/110	Shakes hands on request and continues to desire to talk.
2:17	76	20	130/100	To question, "Want us to come again?" says distinctly, "Yes." Tries to smile.
2:18	....	20	130/100	Returns to condition previous to administration.

TRIAL 8.—J. B., male, age forty-five. Diagnosis: Catatonic dementia praecox, six months' duration after two-year remission. Patient is up and active; works and plays; feeds himself and generally takes care of himself. Smiles and keeps eyes down on being hailed or questioned and remains absolutely mute. No one at hospital has heard patient utter a word since admission.

Time P.M.	Pulse per min.	Resp. per min.	Blood Press.	Remarks
2:49	76	26	136/74	Patient breathing through mask and blowing in it on request.
2:50	84	28	158/110	30% CO_2 and 70% O being administered. Breathing deeply.
2:51½	110	30	160/110	Convulsive twitching of neck muscles, patient suddenly relaxing and apparently becoming anesthetized. Mask withdrawn.
2:52	120	28	158	Patient looking around and to question, "Did you like that medicine?" emphatically answers, "Yes."
2:53	100	28	150/96	Patient looks intelligent; nods and shakes head intelligently to questions but no longer says anything. To question, "Want any more?" shakes head vigorously.
2:55	78	26	136/80	No further response except smiling on repeated questioning.

AMIODOXYL BENZOATE IN THE TREATMENT OF ARTHRITIS*

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YOUNG and Youmans [1] in 1926 were the first to report the use of ammonium ortho-iodoxybenzoate in the treatment of arthritis. Subsequent investigators [2-13] have reported over five hundred cases of arthritis treated by this drug. It is impossible to list these cases in one group on account of the wide variation in terminology and differences in opinion regarding the definition of the terms used, especially in the classification of chronic arthritis. Some investigators classify their cases of chronic arthritis on the basis of etiology, while others list them according to the pathological findings. In some articles both etiology and pathology are taken into consideration in grouping the cases, e. g.: infectious, atrophic, hypertrophic. This lack of universal nomenclature causes confusion in reviewing the literature and in discussing the subject.

Cecil and Archer [14] have adopted the classification of Nichols and Richardson [15] and have divided chronic arthritis into two groups—proliferative and degenerative.

Archer [16] believes that the rheumatoid arthritis of Garrod, the atrophic arthritis of Goldthwaite, the first great group of Ely, and the proliferative arthritis of Nichols and Richardson are different terms which describe the same pathological entity, and probably represent an infectious process. He also believes that the corresponding terms osteoarthritis, hypertrophic arthritis, second great group of Ely, and degenerative arthritis describe the same pathological condition and are probably the result of a noninfectious process. In the proliferative or infectious type the primary change is an inflammatory reaction of the synovial membrane. In the degenerative or noninfectious type the primary change is a degeneration of the joint cartilage.

This classification seems to correspond with the views of those who have made an intensive study of chronic arthritis, and will be used in this report.

PHARMACOLOGICAL ACTION

The pharmacological action of sodium iodoxybenzoate was studied by Loevenhart and Grove [17] in 1911. They found that this substance oxidizes hemoglobin to oxyhemoglobin, and usually causes a more or less marked leukocytosis affecting especially the polymorphonuclear leukocytes. The fall in pressure in the typical cases was usually less marked than the pressure fall caused by iodosobenzoate. Iodoxybenzoate caused a rise of blood pressure in a larger percentage of the cases than did iodosobenzoate. It was not so depressing on the heart as the latter drug, and an increase in cardiac output was the rule. Even though it may have caused as large an initial fall in blood pressure as iodosobenzoate, the return to normal was more rapid than when the latter drug was administered. They concluded that the fall in blood pressure was not due to cardiac effect. Sodium iodoxybenzoate did not act directly on the vessel wall of an isolated loop of intestine. Before severing the splanchnic nerve the volume of the loop increased while the blood pressure was falling. After cutting the splanchnics, the volume of the loop ran parallel to the blood pressure.

PHYSIOLOGICAL ACTION

The experiments led to the conclusion that the lowering of blood pressure was caused by depression of the vasomotor center rather than direct action on the vessel. They believed that the rise in blood pressure, sometimes seen after administration, was mainly due to increased cardiac output; however, they could not exclude the possibility that, under certain conditions, the salt might stimulate the vasomotor center.

The characteristic effect on respiration was a temporary cessation of respiration entirely independent of blood pressure changes. This effect was sometimes confined only to a decrease in rate and depth of respiration. Evidence of stimulation of respiration was also noted.

Arkin [18] pointed out the bactericidal action *in vitro* of sodium iodoxybenzoate for *B. pyocyaneus, B. typhosis,* and *B. Coli.* Toward staphylococcus aureus it was five times less bactericidal than sodium iodosobenzoate.

Proteins did not influence its bactericidal action. Arkin concluded that the bactericidal action was due to the drug's oxidizing properties.

Hektoen [19] found that dogs receiving this substance intravenously produced more antibodies than control animals.

Amberg and Knox [20] demonstrated that sodium iodoxybenzoate diminished the intensity of a local allergic reaction. It did not influence the mechanism of the allergic reaction as such, but acted on the inflammatory processes due to products of the allergic reaction.

Arkin [21] noted the stimulating action of this substance on the phagocytosis of streptococci and staphylococci by human leukocytes in the presence of human serum. He believed that this stimulating effect on phagocytosis was related to the germicidal action of sodium iodoxybenzoate, which is also dependent on the oxygen combined with the iodin in the molecule. Substances which stimulate oxygen production readily stimulate phagocytosis.

Later this same author [22] reported the stimulation of production of hemolysin and agglutinin in rabbits when sodium iodoxybenzoate was given intravenously shortly after immunization. Arkin believed that the results showed a close relation-

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ship between the production of immune bodies (antibodies) and oxidative processes.

Rohdenburg and Reich [28] recently confirmed the germicidal power of sodium iodosobenzoate and sodium iodoxybenzoate.

COMMERCIAL FORMS OF DRUG

Ammonium-ortho-iodoxybenzoate is now available as amiodoxyl benzoate. Before the preparation was accepted by the Council on Pharmacy and Chemistry, we used oxo-ate (Smith, Kline, French). Since its acceptance by the Council, amiodoxyl benzoate (Abbott) has been used. The two preparations gave similar results in all respects. We have given the preparation by the intravenous method exclusively. A preliminary injection of .5 gram was always given to test for hypersensitiveness or idiosyncrasy to the drug. The regular dose was one gram of the substance dissolved in 100 cubic centimeters of sterile physiological saline warmed to body temperature. The solution was used within one hour after being prepared and administered by a 100 cubic centimeter Luer syringe to which was attached rubber tubing about ten inches long, with a suitable glass adapter to fit the needle. The rubber tube and adapter filled with normal saline was attached to the needle after the latter was inserted into the vein, then 100 cubic centimeters of 1 per cent amiodoxyl benzoate was poured into the Luer and the plunger inserted. The rate of flow was regulated by pressure. The usual reaction of the test dose was a slight burning of the tongue and roof of the mouth. Many patients had no reaction of any character with this amount of drug. Occasionally a relatively severe reaction was noted after giving .5 gram. In this instance the next dose was administered cautiously, and the rate of injection modified according to the severity of the symptoms. We have not been able to prognosticate the severity of reaction. Patients complaining of severe symptoms with the test dose often had very little reaction from the full dose, and vice versa.

REACTIONS

After administration of 20 to 30 cubic centimeters of the 100 cubic centimeter solution, patients generally complained of a burning and stinging sensation at the base of the tongue, throat, and roof of the mouth, and burning sensation in the nose and eyes, with lacrimation and watery discharge from the nose. This sensation often spread over the whole body, giving a general sense of warmth with flushing of the face. The taste was usually described as peppery. A few of the patients sneezed, but this was not a usual reaction. Sweating of the face was noted occasionally. The burning sensation and peppery taste have been responsible for the adoption by patients of the nickname "Hot-Shot" as descriptive of the reactions from the treatment. Burning sensation in the epigastrium, and nausea with retching, were the chief symptoms in a few patients. Emesis was rarely observed. Patients rarely complained of sense of weight on the chest or sense of constriction and suffocation. Joint pains were partly alleviated in the majority of patients after the first treatment. A few patients complained of increased joint pain following treatment. One patient had severe chills about three hours after his fifth injection. Headache was a frequent complaint.

Two patients, who respectively had their tonsils and teeth removed about two months prior to treatment, complained of severe burning pain in the tonsillar area and severe pain at the site of the extracted teeth during the administration of the solution. One patient was given seven one-gram injections and one 1¼-gram injection. There was no complaint of reaction of any character during or following the administration of the drug; nor was there any improvement. It must not be reasoned from this particular case that the beneficial effect of amiodoxyl benzoate is dependent upon the severity of the reaction as is probably true in the treatment of arthritis with nonspecific proteins. A comparison of treatment with dead typhoid vaccine and amiodoxyl benzoate is given by Young.[18]

ADMINISTRATION

Atropin sulphate, grains 1/100, was given twenty minutes before the injection of amiodoxyl benzoate, but did not seem to affect the severity of the reaction. Adrenalin, one-half cubic centimeter, given in the same manner diminished the severity of the reaction in some cases.

Injections were usually given every three days. Lately we have given five patients daily injections of 100 cubic centimeters of the 1 per cent solution for eight days. In two patients reactions were of the usual character and severity. One patient developed cramps, diarrhea, and weakness after the fifth daily one-gram injection. These symptoms did not recur after the following injection. After the fifth injection another patient developed an erythematous rash, without purpura, which subsided in five hours without recurrence. No change in the original complete blood count was noted after the eighth injection. Burning and frequent urination, following treatment, was the chief complaint of another patient whose urine contained a few red blood cells before treatment. There were no subsequent abnormal urinary findings. The progress of the patients given daily treatments was about the same as that made by those who were given the treatment at three-day intervals. We believe that treatments may be given every other day with safety. We would like to reserve opinion on daily injection until further study.

Smith [6] has advised modification of the dose according to body weight, recommending that those below 110 pounds be given an initial dose of not over .3 gram, and subsequent doses up to .7 gram; while those over 110 pounds should receive an initial dose of .5 gram and subsequent doses of 1 gram.

The average time allowed for injection was about fifteen minutes. If the symptoms of toxicity were marked, more time was allowed for administration. In most patients the severity of the reaction seemed to depend upon the rate of injection; however, this rule did not always hold true. The same patient often complained of

equally severe symptoms from an injection given in fifteen minutes as from an injection given in seven minutes. The severity of the reaction varied in different individuals.

In five instances we gave the 100 cubic centimeter solution in three minutes with no more than the ordinary reaction. This increased rate of injection was attempted in other instances, but was discontinued on account of the severity of the reaction.

We must not forget that a fatality occurring seven hours after the administration of amiodoxyl benzoate has been reported.[4] The evidence, however, is not conclusive that the drug was responsible for the patient's death. A death twenty-four hours after administration is mentioned by Young and Youmans.

Six or eight injections have constituted a "course" of treatment. We have repeated the "course" in some cases after a two-week interval. No patient has received more than twenty-three injections. Smith[6] gave thirty-two injections to one patient without apparent harm.

Six injections should be given before deciding that the treatment is of no value in any given case.

Blood pressure readings were taken at ten to fifteen-minute intervals. In from ten to forty-five minutes (average eighteen minutes) there was a marked rise in blood pressure averaging eighteen points. After this time there was a gradual fall in pressure until, at the end of one and one-fourth hours (average) the blood pressure was fourteen points (average) below the reading taken before injection. The blood pressure returned to normal in from two to six hours.

Pulse pressure varied *pari passu* with the blood pressure. A rise in temperature of .5 to 1 degree was occasionally noted. The temperature rose from 100 to 104 degrees following the injection in one patient with acute arthritis. The pulse was usually depressed from 5 to 20 points, returning to normal in from two to four hours. The respiratory rate was seldom affected.

These conclusions agree fairly well with those given by Trauba.[11]

No trouble was experienced with thrombosis of the veins following treatment. All veins were washed with normal saline, following the injection of amiodoxyl benzoate.

All patients were given physiotherapy in the form of radiant heat, diathermy, massage, and active and passive motion. We believe that physiotherapy, directed by an expert, is a most valuable adjunct to any type of treatment for arthritis. Amiodoxyl benzoate, by relieving pain and muscle spasm especially in the chronic cases, simplifies the task of the physiotherapist in obtaining early active and passive motion. All probable foci of infection were eliminated in the patients with infectious arthritis before treatment with amiodoxyl benzoate.

We should be very conservative in the elimination of possible foci of infection in patients suffering from the degenerative type of arthritis, as a true focus of infection is rarely demonstrable.

Treatment of joint pain should not be the only consideration in advising a regimen for arthritis, especially of the degenerative type. Diet is an important feature of treatment, as these patients are usually overweight. Methods for improving the circulation and elimination are important features in their care. Pemberton[24] advises a diet of 30 calories per kilo, with 30 per cent of calories derived from carbohydrates; 10 to 15 per cent from protein; and 40 to 50 per cent from fat, the total caloric intake depending on the individual's weight and previous caloric intake. Decided improvement in metabolism and tissue turgor may be accomplished in patients with a low basal metabolic rate by the administration of thyroid extract.

The quartz mercury lamp is valuable on account of its general tonic effect.

The general use of amiodoxyl benzoate should be limited to patients whose mechanical joint changes are not sufficient to preclude the possibility of improvement in function. To other patients it may be given as a palliative for pain. Gout was considered as a possible diagnosis in all cases, and blood uric acid determinations were always obtained.

In selecting cases for treatment, we cannot expect as favorable results in patients with marked bony changes and deformities as in those with no x-ray evidence of joint disease and little deformity or crippling.

RESULTS OF TREATMENT

In reporting our results we would like to emphasize that each individual was placed on a regimen best suited to his needs and directed particularly toward improving his general physical condition.

Twenty-six patients were treated and sufficient time allowed to judge results, most of the patients being followed for over a year.

For comparison we have listed our results in tables similar to those used by Youmans.[12]

Twenty-six patients have been given a total of 182 injections. The majority have received only one, or less than one course of treatment. The ages vary from 18 to 75; the greatest numbers are found in the age groups 40 to 49 and 50 to 59. The disease was acute in five, and chronic in twenty-one patients. There were thirteen cases of infectious arthritis. Ten of these were of nonspecific focal origin. In three the disease was acute, and in seven it was chronic. There were two cases of acute and one of chronic gonorrheal arthritis. There were thirteen cases of degenerative arthritis of which seven were menopausal and six senile. In the acute cases the duration of disease was from five days to two months. In the chronic cases the duration was from nine months to twenty years.

Many factors must be taken into consideration in deciding the degree of improvement. Improvement in one case may mean loss of pain and swelling, while in another it may mean partial or complete restoration of function. If the patient has not been able to climb stairs for months and he

TABLE 1.—*Summary of Results*

Improvement	No. Cases	Per Cent
Marked	12	46
Moderate	8	31
Slight	4	15
None	2	8
Total	26	100

TABLE 2.—*Age of Patients and Relation to Improvement*

Age of Patients	No. Cases	IMPROVEMENT Marked	Moderate	Slight	None
10-19	1	1			
20-29	1	1			
30-39	4	3	1		
40-49	6	1	3	1	1
50-59	6	2	1	2	1
60-69	5	3	2		
70-79	3	1	1	1	
	26	12	8	4	2

is able to do so after treatment, he is obviously classed as markedly improved. The estimation of the degree of improvement is relative with each patient and more or less a personal matter with each investigator.

All patients had some disability, varying from pain and swelling to partial ankylosis. Disability limited to pain and swelling was not considered as crippling. Disturbance in function or crippling, varying from muscular spasm to partial ankylosis, was classed as slight, moderate, and severe.

Opinions as to the value of this treatment vary with different investigators. Results cannot be satisfactory if many cases of arthritis with advanced bony and cartilaginous changes are treated, as when treatment is limited to carefully selected cases offering good chances for improvement in function. Other general measures outlined in this paper are important factors in obtaining the best results.

TABLES SHOWING RESULTS

The general results of this treatment are summarized in Table 1. Of the twenty-six patients, twelve, or 46 per cent, were markedly improved; eight, or 31 per cent, were moderately improved; four, or 15 per cent, were slightly improved, and two, or 8 per cent, received no benefit.

Somewhat better results are obtained in the younger patients (Table 2). Twelve patients between the ages of eighteen and forty-nine were treated; ten of these were markedly or moderately improved. However, in the group of fourteen patients over fifty years of age who were treated, ten were markedly or moderately improved.

The degree of deformity or crippling is an important factor in determining the likelihood of improvement (Table 3). Only two patients in our series had no deformity—both were markedly improved. One with slight crippling was moderately improved. Of the ten with moderate crippling, five, or 50 per cent, were markedly improved; but of the thirteen with severe deformity only five, or 38 per cent, were markedly improved.

TABLE 3.—*Degree of Crippling and Relation to Improvement*

Degree of Crippling	No. Cases	IMPROVEMENT Marked	Moderate	Slight	None
None	2	2			
Slight	1		1		
Moderate	10	5	1	2	2
Severe	13	5	6	2	
	26	12	8	4	2

TABLE 4.—*Duration of Disease and Relation to Improvement*

Duration	No. Cases	IMPROVEMENT Marked	Moderate	Slight	None
Acute	5	4	1		
6 mo.—1 yr.	6	3	2	1	
1-2 yrs.	4	1	2	1	
2-5 yrs.	3	1	1	1	
5-10 yrs.	5	2	1		2
Over 10 yrs.	3	1	1	1	
	26	12	8	4	2

In our series of cases, the shorter the duration of the arthritis the greater was the percentage of marked improvement (Table 4). However, of the patients who had the disease from five to twenty years, 38 per cent were markedly improved.

The cases are evenly divided between the proliferative and degenerative types of arthritis (Table 5). In the first-named group of thirteen patients, there was 54 per cent of marked improvement. In the group of thirteen patients with degenerative arthritis, only 38 per cent showed marked improvement. This is a greater per cent of improvement than we expected in this group.

Table 6 shows that seven, or 58 per cent, of the patients who received less than one course of treatment showed marked improvement. Of these, three cases were acute infectious; two were chronic infectious and two were degenerative. Five, or 42 per cent, of those who had one course of treatment showed marked improvement. The two patients who had two courses showed only moderate improvement. Of these, one patient

TABLE 5.—*Type of Case and Relation to Improvement*

Type of Case	No. Cases	IMPROVEMENT Marked	Moderate	Slight	None
Infectious (Proliferative)					
Acute, non-specific	3	2	1		
Chronic, non-specific	7	2	2	2	1
Acute Gonorrheal	2	2			
Chronic Gonorrheal	1	1			
Degenerative					
Menopausal	7	3	3	1	
Senile	6	2	2	1	1
	26	12	8	4	2

TABLE 6.—*Amount of Treatment and Relation to Improvement*

Amount of Treatment	No. Cases	IMPROVEMENT Marked	Moderate	Slight	None
Less than one course	12	7	3	2	
One course	12	5	3	2	2
Two courses	2		2		
	26	12	8	4	2

had acute infectious and the other degenerative arthritis.

Amiodoxyl benzoate seems efficacious in the treatment of sciatica. Six patients were given six or more injections of the drug; four showed marked improvement and two showed slight or no improvement.

We are not assuming that amiodoxyl benzoate was wholly responsible for the good results obtained. Physiotherapy, diet, and all general measures instituted, exclusive of removal of foci of infection, may have been important factors, especially in the degenerative type of arthritis. We do not believe that any drug or single therapeutic procedure will accomplish all the desired results. Arthritis is a complex therapeutic problem, and each patient suffering from the disease requires intensive individual study and treatment.

THEORIES REGARDING ACTION

Many theories have been advanced to explain the mode of action of amiodoxyl benzoate. We know that oxidizing agents increase reparative processes and delay destructive processes. Arkin demonstrated the germicidal effect of sodium iodoxybenzoate and its stimulating effect on phagocytosis of staphylococci and streptococci by human leukocytes in the presence of human serum. Rohdenburg and Reich have confirmed the former action. Hektoen noted the increased antibody production in dogs receiving this substance. This stimulation of antibody production was verified by Arkin.

Loevenhart and Grove demonstrated the effect of sodium iodoxybenzoate on an isolated loop of intestine. The dilatation of the blood vessels, they concluded, was dependent on their connection with the nervous system. The fall in blood pressure seemed to be due to depression of the vasomotor center. They believed that the occasional rise of blood pressure was caused mainly by increased cardiac output, although they did not exclude the possibility that, under certain conditions, the salt may have stimulated the vasomotor center. Pemberton and others have investigated the possible relationship between changes in circulation with concomitant delayed removal of sugar and failure of removal of oxygen in normal amounts and the occurrence of arthritis.

Rowntree and Adson[25 26] have reported one case of severe polyarthritis of the lower extremities in which bilateral lumbar sympathetic ganglionectomy and ramisectomy was done with encouraging results. Leriche[27] has noted that trauma of an articular region produced a hyperemic reaction at this level. If the hyperemia persisted for longer than ten days, synovitis with hydro-arthritis occurred, especially if the synovia was of great size. Osseous and cartilaginous changes followed. Sympathetic operations modify the vasomotor condition by decreasing hyperemia, and are very effective in the treatment of traumatic arthritis.

It is not unreasonable to assume that amiodoxyl benzoate may so alter vasomotor conditions as to increase circulation of the joint by capillary dilatation. This latter action, if proven, may be responsible for some of the good results obtained in the degenerative type of arthritis.

Many patients have spoken of the improved color and increase in warmth of the lower extremities following treatment. In some patients we have noticed that the newly appearing proximal portions of the nails looked normal, while the distal portion was of the "trophic" type.

It would be interesting to determine the surface temperature and transference of heat from the extremities following the administration of amiodoxyl benzoate.

CONCLUSIONS

1. Arthritis is a complex problem which demands individual personal attention as to details of diagnosis and treatment.

2. The elimination of foci of infection, diet, physiotherapy, and special treatment instituted toward improving the patient's general physical condition are important factors in treatment.

3. The uses, dosage, administration and possible action of amiodoxyl benzoate are discussed.

4. The results of the treatment of twenty-six cases of arthritis are reported, and it is suggested that the use of the drug should be limited to those patients whose joint pathology is such that there is a reasonable possibility of improvement in function.

5. Amiodoxyl benzoate may be given as a palliative measure for pain.

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DISCUSSION

GEORGE C. HENSEL, M. D. (Fitzhugh Building, San Francisco).—Doctor Harbinson has given us a timely discussion of a very useful drug in the treatment of one type of arthritis. His conclusions define its clinical use and value accurately. I am quite in agreement as to its expressed value because of my own experience with the drug and from personal observation of the majority of Doctor Youmans' original series published in 1926.

Amiodoxyl benzoate is more successfully employed in those cases of proliferative arthritis having an infectious origin. Its most favorable influence is seen in that proliferative group determined by genito-urinary Neisserian infection. Many of the proliferative, or so-called infectious arthritides are, however, not demonstrably, from either the clinical or experimental sides, an effect of focal infection. The lack of notable improvement in certain proliferative cases may be explainable on this fact. Though occasional favorable response is obtained with the drug in hypertrophic or degenerative arthritis, such response is little and transient when present, and its general usage is definitely not indicated in this group.

The proper usage of amiodoxyl is, therefore, dependent on accurate recognition of the type of arthritis at hand.

Many reports questioning its value rather clearly demonstrate improper usage of the drug. In several reports there is an evident misunderstanding of the type of case favorably influenced, and the circumstance of its management, as originally defined by Young and Youmans. Doctor Harbinson has again clearly called attention to these two points.

The drug should be used in connection with other therapeutic indications. Its isolated use, or usage under ambulatory conditions promises little more than failure.

The local care of involved joints should be axiomatic in arthritis. The proliferative types with progression lead to crippling and pitiful deformities that only too often must be charged to negligent management. No local curative change is to be expected in the presence of structural changes of synovial membrane, cartilage, or bone.

All Youmans' cases were cared for conjointly with the orthopedic surgeon.

Finally I should like to call attention to its value as a preoperative measure in proliferative cases where surgery is indicated; much after the manner in which Lugol's solution is used preoperatively in cases of hyperplasia of the thyroid gland.

Also the prophylactic use of amiodoxyl in possibly inhibiting progression locally in the joint and, like added involvement of other joints, may be considered a definite indication for usage. Efficiency in this regard is not a matter of certainty at the present time.

GEORGE B. WORTHINGTON, M. D. (902 Medico-Dental Building, San Diego).—Doctor Harbinson has given a very comprehensive and practical résumé of his technique and results of treatment with amiodoxyl in his series of cases of arthritis.

We have used this drug in twenty-seven cases of this disease at the San Diego County General Hospital over a period of more than two years, and feel that, on the whole, our results are somewhat disappointing. Seventeen cases were classified as the proliferative or atrophic type (first great group of Ely), eight were of the degenerative (type 2) form, and two had a quite definite gonorrheal etiology. Our technique was quite similar to that of the author, but in no cases were treatments given daily. Doctor Harbinson's experience with these frequent injections is quite interesting in view of the fact that it demonstrated the comparative lack of toxicity of the drug, even though no particular advantage was apparent from its daily use. The patients were given from one to four courses of six doses each, with an interval of five or six weeks between each course. In those who were improved by this drug, the fourth course produced no marked change for the better. With few exceptions, we noted no severe reactions in any of our cases, and had no fatalities. In one case, a woman of middle age with a moderate hypertension, rather alarming symptoms appeared immediately following the injection, and we feel that the drug should not be given to hypertensives nor to those showing renal impairment or in cases of tuberculosis unless ancient and entirely inactive.

The proliferative cases, especially those of fairly recent origin with very little pathology, showed the most marked improvement, as did those traced to a definite gonorrheal infection. We were gratified with the results in four cases of this group. Alleviation of pain, some lessening of swelling, stiffness and soreness of the

joints, depending on the severity of the process, were noted in the others of this type.

In the hypertrophic cases the results, outside of some temporary increased comfort, were quite discouraging. One cannot expect to influence cases with marked mechanical changes or ankylosis.

All of our cases were given physiotherapy and a diet suited to their needs, with a low carbohydrate intake as suggested by Pemberton in the degenerative form, especially to the obese. Thyroid was often used with benefit in these cases and in those where the menopause was considered to be a factor. There is no doubt that all of these measures must be used if the patient is to be restored to any degree of functional activity, freedom from pain, and the inroads of this most disheartening disease checked. The earlier and more persistently such measures are used the better will be the final results.

All foci should be removed if possible, but this should be done cautiously after the patient's resistance has been built up somewhat, so that he is better able to withstand a flooding of the system with infective material, often leading to a generalization and increase in severity of a comparatively mild arthritis. This has happened on more than one occasion to the discomfiture of the physician. We have noted, on more than one occasion, marked improvement following the cleaning up of pathogenic protozoa in the intestinal tract as advocated by Dr. John V. Barrow and others, and make this a routine procedure where *Ameba histolytica* is found.

Occupational therapy is very beneficial in limbering up stiffened joints. Some of our patients who seemed hopelessly crippled at the start are now able to turn out some excellent articles in tooled leather. This promotes a happier mental attitude and provides a means of livelihood, as well as being of real aid in loosening up the stiffened fingers, wrists, and elbow.

*

Doctor Harbinson (Closing).—Doctor Worthington does not mention the degree of bony change present in the patients he has treated. The majority of county hospital patients suffering from arthritis usually show very extensive x-ray evidence of arthritis and are not helped appreciably by amiodoxyl benzoate. Results vary according to the selection of cases.

Doctor Hensel has stressed the importance of accurate diagnosis and emphasizes the fact that lack of improvement in certain cases of proliferative arthritis, in which we normally might expect good results, may be due to an erroneous diagnosis.

Possible demonstration of the germicidal effect of amiodoxyl benzoate in one of our patients is evidenced by the x-ray report before treatment which read: "Infectious arthritis of destructive type, involving anterior surface of tibio-astragalar joint, chiefly the tibial surface." One month later, after the patient had received eight injections of amiodoxyl benzoate, and was free from pain, the x-ray report read: "Considerable restitution of joint surface and bone, previously reported as destroyed."

We have been favorably impressed with the value of amiodoxyl benzoate as an adjunct in the treatment of hypertrophic arthritis. Many patients over sixty-five, who have been practically bedridden before treatment, have been free from pain and able to walk with the aid of a cane after treatment. Some of these patients have been observed for over a year. We are not attributing these results to the use of amiodoxyl benzoate alone, but believe that it has been a most valuable aid in the treatment. Patients of this type who were benefited by one course of treatment, but whose symptoms returned were again relieved by another course of treatment.

No promises are made as to results, amiodoxyl benzoate being used strictly as a palliative measure. We are prone to consider that arthritis in these elderly people is a heritage and that "nothing can be done but let the disease run its course." We believe that many of these patients can be relieved for long periods of time by measures suggested in this paper.

PARTIAL GASTRIC RESECTION UNDER LOCAL ANESTHESIA*

By Floyd F. Hatch, M. D.
Salt Lake City, Utah

THERE is an old medical axiom that the cure must not be worse than the disease. For purposes of analysis and consideration, various features which concern the multiple methods of treatment in diseases of the stomach should be carefully estimated before a surgeon resorts to any radical operative procedure. Surgery of the future will be identified not so much by new processes as by increased finesse in technique. Instruments of greater precision and a preoperative and postoperative regimen that will eliminate a great number of present cases of unnecessary mortality and morbidity will be perfected.

An era of progress is at present being evolved in the treatment of gastro-intestinal lesions based on more accurate diagnosis and preparation of the patient and more skilled surgery. This includes the use of local anesthesia, the choice of appropriate surgical procedure, and a technique featured with gentleness which pays high dividends in lowering the surgical complications of older methods.

INDICATIONS FOR PARTIAL GASTRIC RESECTION

Partial gastric resection is indicated whenever its performance is possible in *carcinoma of the stomach*.[1] Attempted palliative operations are rarely ever beneficial, and gastro-enterostomy should not be done except in the presence of obstruction unless as a first-stage operation to a subsequent and often much easier resection. In this regard a word should be added urging avoidance of incomplete operations, as primary operations often can easily be performed completely with no more risk than an incomplete one, or one intended as a first stage.[2]

In *certain gastric ulcers* partial gastric resection by one of several methods, each of which has ardent advocates, has its apparent indications according to reports by Balfour, Lewisohn,[3] and others in this country. Finsterer,[4] Von Haberer,[5] Neuber, and other European surgeons in their recently reported conclusions based on the study of a large number of cases recommend that all gastric and duodenal ulcers be treated without exception by partial gastric resection.

Partial gastrectomy for *chronic gastric ulcer* guarantees the safe, complete removal of the ulcer; removal of multiple ulcers (often overlooked) is assured. This means removal of the "ulcer-bearing" portion of the gastric mucosa, and is the greatest insurance against a recurrence. The danger of cancer following local resection variously estimated at from 2 to 20 per cent is eliminated in cases of malignant degeneration of ulcer, or lesions already carcinomatous, by partial resection. Recurrence of ulcer after a previous pre-

* From the Surgical Section, Intermountain Clinic, Salt Lake City.

* Read before the Salt Lake County Medical Society on September 24, 1928.

liminary operation is certainly an indication that gastric resection offers some permanency of cure.

Estimations of occurrence of marginal ulcers vary from 2½ per cent to the 34 per cent of Berg and Lewisohn. The ulcer-forming tendency of some patients makes this operation to reduce acidity most logical especially if previous operation and medication have failed to produce a cure.

The complicating results of gastro-enterostomy, occurrence of hemorrhage, gastric dilatation, and the vicious circle have not caused the anxiety for improving our operation on the stomach that the complication of marginal ulcer has.[6]

It is advocated by many authorities that small gastric ulcers without wide areas of induration be subjected to simple resection or cautery resection followed by a posterior gastro-enterostomy, while partial gastric resection or pylorectomy be reserved for larger indurated ulcers in which the possibility of a malignant change is present.[7]

The cause of gastric and duodenal ulcers is unknown. Their presence constitutes a danger from perforation, hemorrhage, cancerous degeneration, etc. It would appear that resection of ulcers not cured by medication is just and indicated, giving no guarantee thereby that they may not recur.

Perhaps focal infections involving damage to the vascular supply of the lesser curve and duodenum through the right gastric artery and secondary injury to the devitalized mucosa from resulting hyperacidity play an important rôle in etiology.

Surgery is not indicated in acute cases or short duration cases not having had a good regimen of medical therapy.

In *high ulcers* of the *lesser curve*, gastro-enterostomy is the ideal operation for relief of symptoms, but danger of a carcinomatous ulcer, as in a young man in our series recently, makes resection indicated if possible. In *acute perforations*, *marked stenosis* and *most ulcers* of the *stomach* of *penetrating type*, there is an agreement for surgical treatment. Each case must be treated with individual consideration, and probably neither medicine nor surgery will cure 100 per cent until we understand etiology thoroughly.[8]

Perhaps an outline of surgical treatment in cases of gastric and duodenal ulcers will be more unanimously followed when end-result statistical and follow-up studies of large numbers of cases have been correlated and reviewed by the profession.[9]

In duodenal ulcer the majority of American surgeons are convinced that the results attained by local resection or cautery destruction (Balfour) followed by posterior gastro-enterostomy accomplishes a high percentage of cures, with only a rare gastro-jejunal ulcer as a late complication. Individual exceptions to this procedure are found in the pyloroplasty of Finney, modified pylorectomy of Horsley and Mayo, etc.

The summation of opinion of American surgeons is against the procedure of partial resection of the stomach for duodenal ulcer as practiced by

Fig. 1.—Multiple ulcers of stomach and duodenum

a large number of leading European surgeons and not a few leading men in our own country, particularly Berg and Lewisohn of Mount Sinai Hospital, New York.

AVOIDANCE OF COMPLICATIONS

The estimation of 50 per cent of the mortality in upper abdominal operations due to pulmonary complications argues intensively for use of local anesthesia and painstaking preoperative and postoperative care to eliminate these and other possible causative factors. The associated use of local anesthesia as abdominal wall field block and splanchnic plexus infiltration block is recommended by many doing this work as a most valuable adjunct in preventing shock, minimizing postoperative pulmonary complications and otherwise guarding already serious operative risks from the depressing effects of a general anesthetic. These satisfactory results are further increased by the use of a technique which demands gentle handling of tissues, thus allowing a painless and non-shock-producing operation. On occasions use of nitrous oxid or ethylene may wisely support the finish of work begun under local anesthesia.

Many justly termed "puttering operations" are still being performed which locally resect or cauterize, often only in part, a large callous ulcer of the stomach which perhaps has already taken on carcinomatous change. Not always is a posterior gastro-enterostomy done in these cases as an adjunctive procedure; and the final result, with recurrence of the lesion, formation of another ulcer, hour-glass constriction or improper emptying of the stomach, leaves the patient in a condition more aggravated than before.

For some time past the stomach work of Finsterer, Neuber, and others of the central European

school, with its low mortality and freedom from serious complications, has held much attention. An analysis of their results may be summed up as a lowered mortality through use of local anesthesia, entirely, in their cases; gentle handling of tissue; the performance of a standard resection sufficiently radical to widely remove the ulcer-bearing area; and the making of a gastro-intestinal stoma which allows free, prompt gastric emptying.

No surgeon of today can claim for himself the entire credit for perfection of any particular procedure in gastric resection, for to the great Billroth himself must original praise be given, and only for additions and amplifications of his methods can individuals claim originality.

RESULTS OF FINESSE

Finesse in technique should be the aim of all who attempt to qualify in bettering the results of surgery in this field.

In my experience a resection operation often necessarily prolonged in time meets with no pain, no shock, no fall in blood pressure, and no increase in pulse rate when the local anesthetic is properly administered and appropriate technique in handling tissue is observed. There is no forcing out of the abdominal content at any time during the operation, and closure is for this reason manifestly simple and easily performed without trauma.

Postoperative recovery, following these precautionary measures, is striking in the entire absence of nausea and vomiting, thus facilitating early retention of liquids if the surgeon chooses to prescribe them. With the absence of the depression caused by any general anesthetic, the patients make a more rapid recovery, particularly noticeable in the first few days, during which time they are quite themselves except for some abdominal wall pain.

Pulmonary complications, so prominent in the statistics of all upper abdominal operations under general anesthetics, are conspicuous by their relative infrequency.

DESCRIPTION OF METHOD USED

The method which I have followed recently is a modification of the technique of Professor Neuber[10] of Budapest. Preliminary hypodermic injection of one-quarter grain morphin sulphate or morphin and hyoscin may be given. The abdominal wall field block is generously infiltrated with one-half of one per cent novocain in a diamond shape on the upper abdomen, so that an incision through either rectus or in midline is permitted.

After the peritoneum is opened the wall on either side is elevated gently and a transperitoneal injection is made around the whole wound so that the peritoneum will be insensitive in proximity to the wound edges and will not be irritated by necessary manipulations of exploration and operation.

A casual exploration can be made of the stomach, duodenum, and gall bladder if traction on the viscera is avoided and the pathologic area can be located before the splanchnic injection is made. If further operation is contraindicated or a pathologic condition is not found, splanchnic injection is not necessary.

Splanchnic anesthesia is induced most conveniently by means of a special, long 9 or 10-inch Luer needle with a small 24-gauge point and a 16 or 18-gauge shaft. The point of the index finger locates the vertebral body just above the pancreas through the gastrohepatic omentum. This point corresponds closely to the level of the celiac axis artery, around which are closely woven the fibers of the splanchnic plexus. The finger point separates the vena cava from the pulsating aorta and directs the needle to its position against the vertebra where retroperitoneal injection of 100 cubic centimeters of one-half of one per cent novocain is begun. As the injection proceeds the point is gradually withdrawn approximately one-half inch from the vertebra. Suction is always carefully made by the incompletely filled syringe before injecting to avoid direct injection into the lumen of one of the blood vessels.

Either the abdominal block, the peritoneal injection, or the splanchnic anesthesia may be repeated once or more if desirable in prolonged operations without any undesirable effects. Since a sublethal dose of novocain can be repeated intravenously every twenty minutes for many doses without any unusual effect if injected slowly in experimental animals, I have lost much of my fear of novocain toxicity. Injection directly into a small vessel in man is perhaps the cause of the occasional reaction, with faintness, pallor, drop in blood pressure, etc. I have not personally known of a fatality.

In the case of a carcinoma which can be mobilized and in which there are no obvious metastases beyond immediately adjacent enlarged glands, or in the case of a large indurated ulcer which indicates the advisability of a resection operation or for any other good reason which must be weighed and estimated in each individual case, the first step in the technique which I employ for resection is mobilization of the portion to be removed from the gastrocolic and gastrohepatic omenta.

Painstaking hemostasis is provided by passing a double ligature on a carrier under each vascular segment of omenta and double tying before cutting between ligatures. This accomplished, I have found it time-saving and expedient to use the Petz stapling or sewing clamp to close and double-suture the line of resection. This crushed and sutured area can be immediately grasped after removing the clamp and cut between, releasing the resectable portion down to the duodenum.

The proximal portion is reinforced by interrupted catgut sutures at any point of hemorrhage and then inverted three-fourths of the way down by interrupted linen sutures, as any crushed and sutured blind stomach end would be in any type of resection.

Beyond the pylorus, the duodenum is clamped and tied; the stomach resection portion clamped and cut away. The duodenal stump is then carefully inverted with several layers of mattress sutures doubly reinforced finally by a piece of omentum sewed across. A "no-clamp" gastro-

Fig. 2.—Result of partial resection for conditions shown in Fig. 1

jejunal anastomosis is made transversely by resecting horizontally a sufficient portion of the dependent aspect of the stomach to give a generously wide stoma when completed. A short loop of jejunum is brought through the posterior gastric colic omentum, first suturing this omental layer to the posterior wall of the stomach and the operation proceeded with, much as in any ordinary gastro-enterostomy.

The anterior colic loop of Balfour is used when the remnant of stomach appears too short to make a posterior colic anastomosis advisable, or when the omentum is heavy or thick, making stenosis of the stoma seem possible.

The no-clamp operation is facilitated by use of gastric suction on opening the stomach and jejunum for their approximation. Fine linen is used to reinforce the gastro-intestinal anastomosis in interrupted, closely placed mattress sutures.

Drainage is not indicated when proper precautions and appropriate technique have been observed, except in cases of resection for carcinoma, or a cauterization of an unresected ulcer base on the pancreas or liver.

Deseret Bank Building.

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A GOITER SURVEY OF THE HIGH SCHOOL STUDENTS OF CONTRA COSTA COUNTY, CALIFORNIA*

By H. LISSER, M. D.
H. CLARE SHEPARDSON, M. D.
San Francisco
AND
RACHEL K. MILLER, R. N.
Martinez

IN November 1926 an invitation was extended to one of us to conduct a goiter survey of the school children of Contra Costa County. After consultation with Miss Rachel K. Miller, county school nurse, it was agreed that an examination of only the high school students of the county would include the age period when endemic goiter is apparent and that the results of such a survey could reasonably be expected to afford a fair index of the incidence of endemic goiter in Contra Costa County. Before proceeding farther the approval of such a survey was requested of the Contra Costa County Medical Society. At a meeting held January 29, 1927, the cordial endorsement of that organization was placed upon their minutes. It was pointed out by us that our purpose would be to ascertain the frequency of goiter in the various high schools of the county, and that when a case of thyroid enlargement was found the school nurse would notify the parents of the child with the suggestion that the family physician be consulted for further advice and possible treatment.

SURVEY PROCEDURE

The actual survey was conducted during March and April of 1927. There are ten high schools in the county, including two Junior high schools. The county is a fairly large one and the location of the schools can be noted from the accompanying map (Fig. 1). The method of procedure, which worked out very expeditiously, was as follows: In advance of our coming the students in each school filled out a card (Chart 1). Upon our arrival the boys and girls were formed in

* Read in part before the Contra Costa County Medical Society on October 13, 1928.

CHART 1.—*Questionnaire for Special Survey*

CONTRA COSTA COUNTY HIGH SCHOOL

Name Age Date
Sex
Residence (street or road) Elem. School Dist.
High School
Birthplace
Places of residence (city or state)

Date of coming to present location:

separate lines. Each line passed by a physician, there being two of us. The neck had been bared to permit of ready inspection and palpation. All students who were thought to have goiter, or concerning whom there was any doubt as to the question of thyroid enlargement, were asked to step aside to await more thorough examination. The negative cases were immediately dismissed. Those who had been detained for further and more careful examination responded to queries which were recorded by our secretary, and by the county nurse, on the accompanying questionnaire (Chart 2). Although all of the questions enumerated were asked and answered, the information derived from many of them was not significant enough to warrant further comment, consequently no reference to many of them will be found in the remarks that follow. Thereupon they returned to the physician for final decision as to the presence of goiter. The findings were recorded on an examination blank (Chart 3). A glance at both the questionnaire and the examination blank will disclose that all necessary data for the differential diagnosis of goiter were thus conveniently obtained, and without requiring disrobing. At this point it is proper, and a pleasure, to acknowledge the courteous coöperation of the principals and teachers of all the high schools visited, as a result of which large groups of students were satisfactorily handled with a maximum of speed consistent with accuracy.

Before proceeding to summarize the results and discuss their interpretation, it might be well to mention that other physicians conducting a similar survey might have found a higher incidence than we did. We are led to this supposition by reason of the widespread custom of recording "thyroid palpable" in routine physical examinations, as if this were a noteworthy finding. In our experience the overwhelming majority of normally sized thyroid glands are palpable (at any rate the isthmus and lower poles) and that accordingly there is no object in mentioning this fact, whereas a thyroid which is *not* palpable is ordinarily an abnormal and distinctly noteworthy condition. Be this as it may, and admitting that there is legitimate room for difference of opinion as to when a thyroid is large enough to be called a goiter, we are inclined to believe that any errors in our figures will tend to be in the direction of conservatism.

The statistics of the survey have been summarized in a table (Chart 4). Comparison of the two columns showing the number of *pupils examined* in contrast to the number of *pupils registered* in each school, demonstrate that only a very small percentage (5 per cent) failed to report for examination. It is justifiable to conclude, therefore, that the incidence of goiter found was a fairly accurate index of actual conditions.

COMPARISON OF CONTRA COSTA COUNTY FIGURES

Of the 3504 pupils examined, 85, or 2.42 per cent, were found to have goiter. This represents an incidence of twenty-four per thousand for the county. That this constitutes a low frequency may be deduced by a consideration of the statistics from areas where goiter is truly endemic. For instance, Kerr (1919) found among the Alaskan Indians definite enlargement of the thyroid in 10.6 per cent of 310 students examined. Hercus, Benson, and Carter (1925) report a goiter incidence of 31 per cent in the school children of New Zealand. Marine and Kimball in their important study of goiter prophylaxis state that of 2305 school children in Akron, Ohio, who did not take iodin, 495, or 21.4 per cent, developed goiter. It is stated that 59 per cent of the school children in the commune of Rupperswill were goitrous (1885); after the introduction of water from a nongoitrous region, this percentage, by 1907, had dropped to 2.5 per cent. Klinger (1921) found the goiter incidence in the school children of Zurich to vary from 82 to 95 per cent. Incidentally it may be mentioned that Marine found 90 per cent of street dogs of Cleveland to be goitrous. Adami speaks of French Canadian villages in which scarcely a family is to be found that has not one member or more who is goitrous. These figures are introduced to serve as a basis for comparison. It may occasion surprise that even twenty-four per thousand should occur in a county bordering partly on Su'sun Bay and not far from the ocean. In this connection it is interesting to note that Duncan (1905) presents similar figures; twenty per thousand in Macabebe, near Manila Bay, only a few feet above sea level.

Coming back to the Contra Costa County survey, it was found that only one-half the percentage of goiter occurred in Richmond as compared with the rest of the county. The figures are these: twenty-eight goiters out of 1842 students examined in Richmond (1.5 per cent), in contrast to fifty-seven goiters out of 1652 students (3.4 per cent) examined in the remaining high schools of Contra Costa County.

Some 1804 girls were examined as compared with 1528 boys. There were accordingly only 8 per cent more girls than boys. However, of the 85 goiters found, 75, or 88.3 per cent, occurred in girls, whereas only 10, or 11.7 per cent, occurred in boys, a ratio of 7½ to 1. This agrees with figures elsewhere. Some writers claim that goiter exists eight times in females to once in the male, but such a ratio is more apt to occur where goiter is relatively infrequent. DeQuervain found the ratio 3 to 1 in favor of females in Switzerland, where goiter is exceptionally common, but on approaching an intense endemic focus the number of males affected more nearly approxi-

mate the number of females; 1.6 to 1 in Berne. Analyzing the sex statistics still further, of the 1528 boys, .65 per cent had goiter (6.5 per thousand), whereas of the 1804 girls examined, 4.15 per cent (or 41½ per thousand) had goiter.

BIRTHPLACE AND RESIDENCE FACTORS

An attempt was made to ascertain the influence of birthplace, and length of residence in Contra Costa County, upon those who had goiter. It is difficult to form very positive conclusions on these points, but this much may be stated—of the eighty-five pupils who were found to be goitrous, sixteen were born in Contra Costa County and had always lived there; twenty-four were born in California, not in Contra Costa County, but had lived in that county an average of 5.3 years, including a range of one-half to twelve years' residence. Of these, thirteen of the twenty-four had lived in Contra Costa County five or more years. The remaining forty-three goitrous students were born outside of California, but had lived in Contra Costa County an average of 2.9 years, including a similar range of one-half to twelve years; eight of these forty-five resided in Contra Costa County five or more years. Therefore, in formulating conclusions as to the frequency of goiter in Contra Costa County the striking fact must be taken into consideration that forty-five of the eighty-five goiters found in the high school children originated, in all probability, outside of California. A detailed study of these forty-five cases indicates that in almost every instance they migrated from states or foreign countries where goiters are known to be prevalent. A goodly number came from British Columbia, Oregon, Washington, Idaho, and Montana; another group from the Great Lakes region; and a few from the mountainous portions of Germany, Austria, and Italy. In this connection attention may be called to the study made in 1926 by Dr. Ruby Cunningham among women students of the University of California. She found, of 7320 women students entering that university during a five-year period, 1361 or 18.6 per cent had enlargement of the thyroid gland; 500 of these were more thoroughly studied; 337 of these 500 were born in other countries or states, and of the students with abnormal thyroids coming from other states 177, or 17.4 per cent, had resided in states or countries in which the goiter incidence is high. Of 2341 students registering from California 245, or 10.5 per cent, showed thyroid enlargement. These figures concerning older girls residing in a community immediately next to Contra Costa County prove still further how low the goiter incidence is in Contra Costa County itself.

The following data are obtained when inquiry is made into the relationship of sex and goiter

CHART 2.—*Questionnaire for Students With Enlarged Thyroids*

CONTRA COSTA COUNTY

1. Name ..... Age:..... Sex:..... Date:.....
2. Address: (Give name of street or road, and elementary school district).....

3. Places of residence with water supply:

Date (Year Only)	City	County and State	Water Supply (Public, Private, Spring, Well, River, Lake)
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....
.....	.....	.....	.....

4. Have other members of your family enlarged thyroids, or unusual fullness of the neck?.....
   Enumerate: .....
5. At what age did you, or any one else, first notice an enlargement of your thyroid?.....
6. Has the enlargement remained stationary, increased or decreased?.....
7. Has the change in size been gradual, or sudden?.....
8. If a change in size occurred suddenly, state the age at which it occurred.....
9. (For girls): Age of onset of catamenia:.....If abnormal in amount or interval, give details: .....
10. Have you had treatment for your thyroid?.....If so, state the nature and duration of treatment:.....
11. Do you use iodized salt, and if so for how long?.....
12. Do you consider yourself nervous?.....If so, in what way:
    Sleeplessness:..... Tendency to worry:..... Irritability:.....
13. Have you lost or gained weight since appearance of goiter?.....
    How much? .....
14. Have your eyes become more prominent than they used to be?.....

incidence to birthplace and period of residence outside of Contra Costa County:

Girls		Goiters
Born in Contra Costa County	593	18
Born in California, but outside of Contra Costa County	567	18
Born outside of California	557	39
Boys		
Born in Contra Costa County	532	2
Born in California, but outside of Contra Costa County	485	2
Born outside of California	430	6

These figures disclose that we are dealing with fairly equal groups of boys and girls and, furthermore, fairly equal groups as far as birthplace is concerned. Although the total number of goiters in each group is too small for any far-reaching conclusions, it would seem, as pointed out before in the consideration of the sex ratio, that there are relatively more boys with goiter who were born in recognized goiter areas; in other words, nine girls to one boy in the groups born in Contra Costa County and also in the groups born elsewhere in California, but only six girls to one boy in the groups of girls and boys born outside of California, where goiter is more frequent.

INCIDENCE IN DIFFERENT SCHOOLS

Studying the statistics summarized in Chart 4 from still another angle, we find what may be a significant discovery. Although the average percentage of goiter found throughout the high schools of Contra Costa County was only 2.42 per cent, a study of the percentages for each school district reveals that this percentage varied from zero in Crockett and 1.3 in Richmond and Pittsburg, to 5.2 and 5.8 in Martinez and Antioch, provided one leaves out of consideration the one notable exception, namely, the San Ramon Valley High School located in Danville. Reference to the chart discloses the striking fact that eleven of the eighty-five goiters were discovered in this school.

CHART 3.—*Examination of Students With Enlarged Thyroids*

Name:

1. Appearance of Students:
   - Normal: Thin: Short:
   - Toxic: Obese: Tall:
2. Skin: Moist: Smooth: Warm.
   - Dry: Rough: Cold:
3. Eyes: Exophthalmus:
   - Thyroid eye signs:
4. Tremor: Of protruded tongue:
   - Of extremities:
5. Heart: Rate: Rhythm:
   - Type of sounds:
6. Thyroid Gland:
   - Type of Enlargement: Colloid: Symmetrical
   - Thrill: Adenomata—R. Lobe
   - L. Lobe
   - Bruit
   - Isthmus

Of 101 registered students in this school, eighty-seven were examined; of these 87, 11 or 12.6 per cent had goiter. Of these 11, only one was born outside of California, he spending eight years in Philadelphia, eight years in Oregon, and the last three years at Danville; in all likelihood his goiter originated outside of Contra Costa County. Four of the goitrous students lived their entire lives in the San Ramon Valley High School District. The remaining six were born in California, outside of Contra Costa County. They spent an average of 6.8 years in Contra Costa County (the puberty years); two spending the last five years there; three residing there the last eight, ten, and twelve years, respectively, while one goitrous student spent only a year in the district. It may be reasonably concluded, therefore, that the Walnut Creek-Danville district can be held responsible for nine of the eleven goiters found. In other words, among the school children in this district there would seem to be a goiter incidence of about 10 per cent.

SOURCE OF DRINKING WATER

In the last column of the table (Chart 4) will be found notations concerning the source of drinking water in the respective high school districts. The drinking water used by the children attending the San Ramon Valley High School comes partly from private wells. We were hardly in a position to make any extensive investigation of the geological relations throughout the entire county. However, in view of the relatively high incidence of goiter in the San Ramon Valley High School District (at least as compared with the remainder of the county) it was thought desirable, if possible, to obtain some authoritative information with regard to the sources of drinking water in this district. To this end the advice and coöperation of Professor George D. Lauderback, professor of the geological sciences at the University of California, was enlisted, and the writers at this point desire to express their appreciation of his courtesy and trouble in this connection.

Professor Lauderback examined the source of water utilized by nine of the eleven goitrous students in this district. What follows is in part a copy of his report:

"Although these listed cases are rather widely scattered, and although there is a variety of formations in the general district, I was surprised to find that all of the domestic water supplies occur under very similar geological conditions. They are developed from underground waters that seep into wells and (one spring) from the somewhat pervious layers of the Orinda formation or from an overlying alluvium derived wholly or mostly from the Orinda formation. The distribution of cases is rather striking, from the geological standpoint, in that it follows the peculiar areal extension of the Orinda formation.

"The Orinda formation is of lower Pliocene age, and was deposited under fresh-water conditions, chiefly by streams that flowed down to the east of a dividing ridge or belt of comparatively high land that separated that country from the immediate Pacific coastal belt. The deposits making up this formation are chiefly sandy clays, clayey sandstones, and gravel beds that contain considerable sand and clay in the spaces between the pebbles. Occasionally small amounts of limestone, volcanic tuff, etc., are found.

"The alluvium in these localities is derived wholly or mostly from the Orinda formation, by weathering

CHART 4.—*Statistics of the Contra Costa High School Survey*

School	No. of Pupils Registered	No. of Pupils Examined	No. of Goiters Found	Percentage of Goiters	No. of boys Examined	No. of boys With Goiter	Percentage of Boys with Goiter	No. of girls Examined	No. of girls With Goiter	Percentage girls With Goiter	Source of Drinking Water
Liberty Union (Brentwood)	169	146	7	4.8	71	0	0	75	7	9.3	Private Wells
Riverview (Antioch)	149	137	8	5.8	51	0	0	86	8	9.3	River, Wells, Rainwater
Pittsburg High School	183	197	4	2.0	89	0	0	108	4	3.7	River
Pittsburg Junior	267	298	4	1.3	137	1	.73	161	3	1.8	River
Mt. Diablo Union (Concord)	382	354	9	2.8	188	1	.53	166	8	4.8	Well water Supplied by Diablo and Port Costa Water Co.
Alhambra Union (Martinez)	294	271	14	5.2	121	1	.83	150	13	8.6	" "
John Swett (Crockett)	206	172	0	0	0	0	0	.....	0	0	" "
San Ramon Valley Union (Danville)	101	87	11	12.6	45	3	6.6	42	8	19.0	All sorts of Drinking water See text
Richmond Union Grades 10-11-12	754	686	9	1.3	337	0	0	349	9	2.6	*East Bay Water Co.
Roosevelt Junior (Richmond) Grades 7, 8, 9	1197	1156	19	1.6	489	4	.82	667	15	2.2	*" "
Total.....	3702	3504	85	Av. 2.42%	1528	10	.65%	1804	75	Av. 4.15%	

*Students in Richmond Schools but residing in Pinole have a separate private supply from wells.

and erosion, and has been deposited in the valley bottoms by the present streams. It sometimes reaches a considerable thickness, and some of the wells do not penetrate through it into the bedrock below. The material of the alluvium is very similar to that of the Orinda, but in a less consolidated or hardened condition, the clay being more plastic.

"The detrital materials of which the Orinda formation and the alluvium are composed were derived from the Coast Range formations, and the water which they contain is either original or derived from the infiltration of local rain water, and has not come through underground channels from distant sources.

"If the condition of the affected pupils is directly the result of the absence of or an exceedingly low content of iodin in the water supplies, the composition and physical condition of the formations may offer an explanation. In both the Orinda formation and the alluvium, even the more open and porous layers which allow of a slow percolation into the wells contain a considerable amount of a soft or plastic clay. This clay was formed and deposited under fresh-water conditions and is colloidal, and would tend to absorb and hold any iodin salts and prevent their passing into the wells or out through springs into the water supply.

"It is also probable that most of these waters are rather hard, a condition common in most of the regions of endemic goiter that I have seen or read of.

"Danville has in part a supply brought in by a local water company. As far as I can learn no cases have developed among pupils using that supply. Your Danville case, No. 3, uses a private well. The company's water comes from high up on a ridge west of Danville at an elevation of probably 1200 or 1300 feet, and from a formation different from those described above. This formation is older (Miocene) and was originally formed under marine conditions. Its original salt water, at least in the part yielding water to the town supply, must of course have been washed out by percolating rain waters, as the supply is now fresh. The water-bearing strata are more open and much freer of colloidal material than in the Orinda or Orinda-derived alluvial formations.

"I have made the above suggestions as to the possible connection between the mode of occurrence of the water and the cases you reported on the basis of the most distinctive characteristics common to all the water supplies involved. I realize that the evidence so far considered does not constitute a proof. A more extensive study both of cases and of water supplies, including supplies of those not affected by goiter, would be necessary."

Recognizing the importance of obtaining comparative information regarding the sources of water of the nongoitrous students in this locality, one of us (Miss Miller), with the aid of Doctor Clark of the geological department of the University made some further observations. Of the seventy-six nongoitrous girls and boys examined from this district, twenty had resided there less than two years. It was thought unnecessary, for the purposes of this study, to deal further with them since local influences would have been operating for only a relatively short period of time. The remaining fifty-six were investigated.

A summary of the findings disclosed that fifteen students obtained their water from the Orindan or Temescal formations (Doctor Clark was disinclined

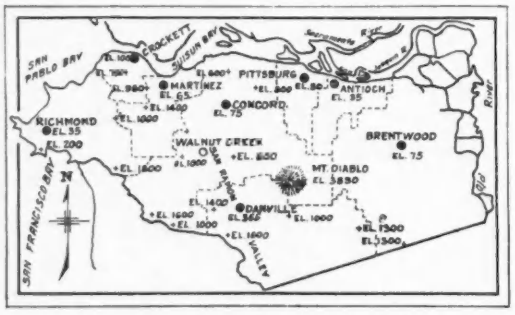

Fig. 1.—Map of Contra Costa County, California

to make any distinction between the Temescal and the Orindan formations, since they are both of fresh-water deposit). Thirteen students received their water from the Danville town supply which, as noted above (by Professor Lauderback), comes from an entirely different formation. Twenty-one students obtained water from private wells which did not originate in either the Orindan or Temescal formations. The remaining seven students used spring water; four of these springs were not from Orindan formation; three students obtained water from the spring on Mount Diablo, which was the source of supply for one of the goitrous students. Unfortunately at the time Professor Lauderback made his investigation, road and weather conditions made this spring inaccessible.

Neither Professor Lauderback nor the writers consider the geological data summarized above sufficiently comprehensive for Contra Costa County as a whole, and perhaps not even for the San Ramon district, to permit of far-reaching conclusions. The findings are nevertheless suggestive. They would seem to indicate that geological conditions exist in the San Ramon neighborhood which are conducive to an iodin-poor water supply, at least for a number of private wells whose water originates in the Orindan formation. To recapitulate: Of eighty-seven students examined from the San Ramon Valley High School District, eleven were found to have goiter. From an analysis of their length of residence in this district, it may reasonably be concluded that nine of the eleven goiters originated there. Of these nine students, eight obtained their water from wells originating in the Orindan formation, whereas only fifteen out of fifty-six nongoitrous students obtained their water from the same source.

TYPES OF GOITERS FOUND

Finally a few words regarding the types of goiters found. All of the eighty-five goiters come under the general classification of diffuse colloid goiter; sixty of these were pure colloid goiters otherwise known as "simple goiter" or "adolescent goiter." Of the remaining twenty-five goiters, sixteen contained adenomata and three of the students in this group showed constitutional evidence of a mild grade of thyrotoxicosis. Nine of the eighty-five goiters were diffuse colloid in type and did not contain adenomata, but gave evidence of hyperplastic change, either locally in the form of thrill or bruit, or by constitutional evidence of hyperthyroidism. Adding the three adenomatous goiters with hyperthyroidism to the nine goiters with mild Graves' disease, gives twelve out of eighty-five goiters or about 14 per cent, in which there was some evidence of early toxic transformation.

CONCLUSIONS

1. An examination of 3504 high school students in Contra Costa County revealed a decidedly low goiter incidence, namely, 2.42 per cent.

2. However, of the eighty-seven students examined in the San Ramon Valley high school, eleven were found to have goiters, 12.6 per cent. An investigation of the geologic formations from which these students receive their water supply furnished some suggestive information. If a recheck of this district confirms this relatively high incidence it might be wise to institute routine prophylactic iodin therapy, at least for those students who derive their water from private wells. There seems to be no need for such prophylaxis in the remainder of the county.

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TULAREMIA IN NEVADA*

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AND
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FRANCIS, in a number of papers, has stressed the importance of tularemia from a public health standpoint. The appearance of the disease has been noted in many states. Opportunity has been given the writers to survey the State of Nevada as to the endemicity and, for matter of record, the facts learned are briefly noted.

The simultaneous appearance of six cases of tularemia in the Southern Pacific Hospital at San Francisco, California, from Nevada in August 1928 attracted considerable attention. At the request of Dr. W. B. Coffey, chief surgeon of the Southern Pacific Railroad, and in coöperation with Dr. E. E. Hamer, state health officer, an investigation was made.

EXTENT OF THE INVESTIGATION

The actual area visited was indeed small. However, the area of information covered is considered roughly to be practically the center of the state, to the state lines of California, Oregon, and Utah. One proved case, however, has been seen from the southeastern portion of the state.

NUMBER OF CASES OFFICIALLY REPORTED

Apparently the State Health Department took official notice of tularemia in 1926 and an admirable bulletin by Albert in August 1926 was their first and only publication regarding the presence of tularemia in Nevada. This publication called attention to fifteen cases. The records of proved cases found in the State Hygienic Laboratory at Reno was seventeen in 1926, five in 1927, and fourteen in 1928, a total of thirty-six cases for the period of 1926 to 1928, inclusive. Since then the records of fourteen additional proved cases are available, making fifty in all.

Full information is only obtainable from the proved cases. Of these, forty-two were male and

* From the George Williams Hooper Foundation for Medical Research, University of California, San Francisco.

TABLE 1.—*Proved Cases of Tularemia in Nevada, 1926*

Location	Age	Sex	Type	Diagnosis Proved	Source of Infection	Month Infected
Reno	10	M.	Gland	Yes	Rabbits	June
Lovelock	13	F.	Gland	Yes	Rabbits	June
Gardnerville	50	M.	Gland	Yes	Rabbits	June
Lovelock	13	F.	Ulcer	Yes	Not known (possibly ticks)	June
Reno	44	F.	Ulcer	Yes	Rabbits	June
Wellington	55	M.	Ulcer	Yes	Rabbits	June
Yerington	15	M.	Gland and Ulcer	Yes	Rabbits	June
Reno	50	M.	Glandand Ulcer	Yes	Rabbits	June
Yerington	52	F.	Glandand Ulcer	Yes	Rabbits	June
Reno	50	F.	Glandand Ulcer	Yes	Rabbits	June
Yerington	38	M.	Glandand Ulcer	Yes	Rabbits	June
Reno	40	M.	Glandand Ulcer	Yes	Sheep (butcher burr in thumb)	June
Yerington	42	M.	Glandand Ulcer	Yes	Rabbits	June
Reno	50	M.	Glandand Ulcer	Yes	Handling sheep hides	June
Simpson	41	M.	Glandand Ulcer	Yes	Fly bite	July
Reno	49	M.	Glandand Ulcer	Yes	Rabbits	July
Reno	35	M.	Glandand Ulcer	Yes	Fly bite	July

eight female; only four were children, none under ten years. The source of the infection was attributed to rabbits in thirty-two cases; to tick bites, seven; to fly bites, six; to injuries and probable contact with contaminated material, four; and one to mosquito bites.

PROBABLE INCIDENCE OF THE DISEASE

The officially reported and proved cases (fifty) as often occurs, do not represent the actual incidence. The first cases from our data occurred in Nevada in 1912 near Battle Mountain, and the first proved case occurred in 1926 near Reno. In all, fifteen physicians were interviewed in wide areas of the state. These can be roughly divided as being situated in western and eastern sections of Nevada. The physicians in the western section speak of cases occurring only from 1926, while those from the eastern section speak of cases occurring from 1912. These physicians (N. A. Paradis, F. H. Harper, Sparks; George Magee, William Edwards, Yerington; Charles Secor, R. P. Roantree, A. J. Hood, John A. Warden, Shaw and Haas, Elko; E. H. Hawkins, S. R. Clark, Battle Mountain; George F. Pope, Charles E. Swezy, E. D. Giroux, Winnemucca) report, on careful questioning, having seen 243 cases

TABLE 2.—*Proved Cases of Tularemia in Nevada, 1927*

Location	Age	Sex	Type	Diagnosis Proved		Profitable Source of Infection	Month Infected
				Agglutination	Animal Inoculation		
Yerington	35	M.	Glandand Ulcer	Yes		Rabbits	June
Yerington	40	M.	Glandand Ulcer	Yes		Rabbits	June
Gardnerville	45	M.	Glandand Ulcer	Yes		Rabbits	June
Yerington	40	M.	Glandand Ulcer	Yes		Rabbits	July
Winnemucca	39	M.	Glandand Ulcer	Yes		Deerfly	August Reported by Drs. Miller and Taussig, Unversity of California Hospital Clinics
Gardnerville	26	M.	Glandand Ulcer	Yes		Rabbits	July

of tularemia, none of which have heretofore been reported. Again, two of these physicians stated that cases had been seen before 1928, but would not venture stating the number. It is decidedly important to note that no deaths are recorded in this series of 243 unofficial, and 50 official and proved cases, or in a total of 293 cases. From these figures one can only conclude that tularemia as a disease in human beings is widespread in Nevada, and has probably existed since 1912. It could be stated, however, that though the disease is endemic the group incidence is low. This is shown in the Shoshone cases. Shoshone is a railroad construction camp of approximately 125 men, all living practically under similar conditions. Two cases only were reported for 1928 from this more or less medically supervised group.

PROBABLE SOURCE OF THE INFECTION OF THE HUMAN CASES

Since wild rabbits are generally considered the principal animals affected, and the chief source of the disease in man, careful inquiry was made accordingly. The widespread death of rabbits has been universally noted in western Nevada in 1926. Mr. E. R. Sans of the United States Biological Survey indicated that the rabbit mortality extended into California, Oregon, and Idaho, but not east of Black Rock Desert in Nevada. He stated that the Biological Survey was engaged in active poisoning, and quoted the death of 4500 rabbits on a 300-acre ranch. He considered tularemia an aid to their destruction. His opinion as to the absence of deaths in the rabbit population in eastern Nevada in recent or past years is not borne out by the opinion of local physicians. These physicians point out that the rabbit population recently has been diminished, as it has been in years past, by some form of rabbit disease. They even go so far as to talk about seven-year cycles of increased prevalence of rabbits followed by an increased death rate. It is not unlikely, as the record seems to indicate, that the wild rabbits of Nevada have the disease in chronic form. Many are killed in apparently healthy condition only to cause human cases by contact. In fact, the killing of rabbits and their subsequent shipping for use as food may be a source of danger to the shipper, the transportation company, and the seller and user. Notwithstanding that the great reservoir of infection may be rabbits, ticks, flies, and perhaps mosquitoes, though information regarding mosquitoes is most vague. Such bizarre methods of transmission as dogs licking open

TABLE 3.—*Proved Cases of Tularemia in Nevada, 1928*

Location	Age	Sex	Type	Diagnosis Proved		Probable Source of Infection	Month Infected
				Agglutination	Animal Inoculation		
Winnemucca	40	M.	Gland and Ulcer	Yes		Rabbits	April
Grass Valley	34	M.	Gland and Ulcer	Yes		Tick bite	May
Reno	55	M.	Gland and Ulcer	Yes		Rabbits (Alturas, Calif.)	June
Midas	32	M.	Gland and Ulcer	Yes		Rabbits	June
Reno	18	M.	Gland and Ulcer	Yes		Rabbits (Alturas, Calif.)	June
Ruby Valley	24	M.	Gland and Ulcer	Yes		Rabbits	June
Palisade	37	F.	Gland and Ulcer	Yes		Rabbits	June
Wimberly	32	M.	Gland and Ulcer	Yes		Rabbits	July
Winnemucca	17	M.	Gland and Ulcer	Yes		Deerfly	July
Yerington	40	M.	Gland and Ulcer	Yes		Rabbits	July
Elko	50	M. Indian	Gland and Ulcer	Yes		Rabbits	July
Battle Mountain	50	M.	Gland and Ulcer	Yes		Deerfly	July
Ruby Valley	28	M.	Gland and Ulcer	Yes		Tick bite	July
Ruby Valley	39	F.	Gland and Ulcer	Yes		Deerfly	July
Mound House	30	M.	Gland and Ulcer	Yes		Rabbits	August
Beowawe	31	M.	Gland and Ulcer	Yes		Unknown lesion on foot	August
Pine Valley	10	F.	Gland and Ulcer	Yes		Attributed to mosquito bite	August
Yerington	23	M.	Gland and Ulcer	Yes		Rabbits	August

TABLE 4.—*Proved Cases of Tularemia at Southern Pacific Hospital, San Francisco, 1928*

Location	Age	Sex	Type	Diagnosis Proved		Source of Infection	Month Infected
				Agglutination	Animal Inoculation		
Las Vegas (So. Nevada)	30	M.	Gland and Ulcer	Yes	Yes Culture	Rabbits	June
Sparks	35	M.	Gland and Ulcer	Yes		Deerfly	July
Sparks	40	M.	Gland and Ulcer	Yes	Yes Culture	Tick bite (Alturas, Calif.)	July
Sparks	35	M.	Gland and Ulcer	Yes		Rabbits	July
Reno	24	M.	Gland and Ulcer	Yes		Rabbits	July
Shoshone	30	M.	Gland and Ulcer	Yes		Ticks	August
Shoshone	28	M.	Gland and Ulcer	Yes		Ticks	August
Ellenberg	38	M.	Typhoidal	Yes		Ticks	August
Elko	28	M.	Gland and Ulcer	Yes	Yes	Rabbit Used knife to skin rabbits and later cut finger on knife	September

wounds, coyote pup bites (both dogs and coyotes having been known to have been chasing rabbits), the wiping of hay knives on machines after cutting through and into rabbits nesting in the hay, barbed-wire cuts, the handling or shearing of sheep, have been noted in our series of cases. In addition, and of what importance, we do not as yet know, one patient only handled turkeys dead from an unknown disease. In our data there is recorded the death of one hundred chickens owned by a physician who fed them rabbit meat and liver. This physician's wife was seen with tularemia, probably from handling the rabbits fed to the chickens, but no examination was made of the chickens.

COMMENT

Tularemia has probably been endemic in Nevada since 1912. There appears to be every type of transmission—rabbits, flies, ticks, contact with other animals apparently healthy such as dogs, coyotes, and sheep, and with such extraneous material as knife blades and barbed-wire. However, no cases have been noted in this series as being due to contact with human cases. The question of immunity of the Indians of Nevada was continually brought to the fore. There is a record of one proved case in a Piute, and other cases have been seen in the Shoshones. It could be stated that, though the wild rabbits have always been a source of meat for the Indians in Nevada, the cases of tularemia in them are rare, or that the Indian is or has become wiser than his white brother. The endemicity of tularemia in the human depends on the disease in the rabbit and the infected blood-sucking insect population of the district. It would appear that in Nevada both of these factors are unusually and definitely present. The mortality rate in the human cases in Nevada, however, has been nil, but final recovery has been exceedingly slow.

Every variety of treatment was suggested as efficacious, but methods such as mercurochrome intravenously, salvarsan intravenously, the use of phenol as a counterirritant in glandular cases, the use of acid mercuric nitrate and arsenical paste as a cautery agent applied to the initial lesion, and the use of the ultra-violet lamp, seem to indicate their nonspecificity.

George Williams Hooper Foundation for Medical Research, University of California.

TUBERCULOSIS IN A GENERAL HOSPITAL*

By PHILIP KING BROWN, M. D.
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DISCUSSION *by Charles L. McVey, M. D., Oakland; C. E. Atkinson, M. D., Banning.*

EMPHASIS in the treatment of tuberculosis was formerly placed on climate and on altitude, and mitigated against care in general hospitals of both medical and surgical tuberculosis. Now, when tuberculosis of bone demands conditions of light and air treatment which formerly seemed the chief consideration in the treatment of pulmonary tuberculosis, and pulmonary tuberculosis is today aided by surgical care in many cases, every hospital must be fully equipped for the fight against tuberculosis in all its phases. The problems presented, individual in every case, are no longer solved by such generalizations as residence in Arizona or Colorado for an indefinite period in some boarding house. It is a question today of accurate diagnosis, supported by the best of x-ray studies, by a complete history and a physical investigation. A survey of the social and economic problems is also in order. Armed with all the facts—the extent and probable duration of the process, the background of resistance which a good history brings to light, a history of complications, concurrent troubles, financial resources, possibility of freedom from worry—the doctor

* Read at the National Tuberculosis Association meeting, 1928, Portland, Oregon.

may select a sanatorium where he can summon to his aid all resources he may need. And among these aids surgical collapse of the lung must be considered.

The chief arguments in favor of an organization such as the American Sanatorium Association are the standardization of care so far as care can be standardized, the evaluation of all new methods proposed, the suppression as far as possible of all low-grade institutions, and of mystic therapeutic measures, and finally the demanding of the profession that only such cases as will be benefited by the care that a sanatorium affords shall be sent away from home. The ideal sanatorium is the place conducted as a home, a school and a hospital. A patient who on initial examination is found to have a unilateral lesion with a cavity three centimeters in diameter presents a totally different problem from one with limited tuberculous pneumonia and beginning softening, or one who has had compression of the lung to stop loss of blood from hemorrhage. It is presumed that no sanatorium has the right to exist today that does not afford patients an opportunity for some of the artificial means of inducing rest, such as pneumothorax. It is presumed also that the x-ray as an adjunct to diagnosis of tuberculous disease and therapy, is absolutely necessary. I do not believe that artificial pneumothorax is a justifiable procedure unless checked by screen or plate. Even the value of postural rest as an aid to cavity closure cannot be judged by physical signs alone. All these aids to diagnosis and progress are available in general hospitals; it is surprising how few who deal with tuberculous patients employ all the means that are recognized as necessary in modern sanatoriums of studying and following up the cases. Even where the x-ray is available many clinicians study only the findings of thermometer, stethoscope, sputum, and scales. It would seem that such incompletely equipped sanatoriums must more closely follow the scheme of the general hospital to obtain ideal conditions; and that the majority of cases of pulmonary tuberculosis shall be treated on the lines of acute illness needing every aid of investigation and treatment rather than depend upon the too lax and insufficient means of most sanatoriums. The old epigram of Pryor is still all too true, "We must treat the tuberculosis patient in the right place and the right way at the right time until he is cured, instead of in the wrong place and wrong time and wrong way until he is dead."

ANESTHESIA AND TUBERCULOSIS

The problem of tuberculosis in a general hospital is well illustrated by the medical and surgical records of the Southern Pacific Hospital. Of 702 admissions for tuberculosis 440 were for tuberculosis of the lung; 52 for lymphadenitis; 26 for tuberculous laryngitis, etc. From a study of the cases admitted to the Southern Pacific Hospital in the last eight and a half years, nearly 10 per cent of the beds had to be set aside for the care of acute and chronic forms of tuberculosis, both medical and surgical. Of the 29,200 admissions, 702 had tuberculosis in some form. It is unfortunate that no record has been kept of the large group of cases sent in on a diagnosis other than tuberculosis who were found on general routine examination to be suffering from that disease also. So important a finding is this, and so impressed have our surgeons become by the uncovering of unsuspected tuberculosis and syphilis in a large group, that operation is more frequently postponed or done under local anesthesia because of questionable lung soundness than because of any heart defect. This is as it should be, for the soundness of the lungs and upper respiratory tract is imperative when general anesthesia is produced, whereas a very great deal of heart damage sufficiently compensated may not be a contraindication. Dr. Chesley Bush, director of Arroyo Sanatorium, the municipal hospital in Alameda County for tuberculosis patients, stated that while he was resident at a private institution with 182 beds, one-fourth of the admissions were of patients who had previously had a general anesthetic, mostly for tonsil removal, within one year. This result of general anesthesia upon incipient tuberculosis should be brought to the attention of all surgeons, so that no patient be sent to the operating room on whom a careful lung examination has not been made. At Arequipa Sanatorium it is our repeated experience that tuberculosis has followed shortly after ether or other general anesthesia. Among 1250 admissions, to date 34, or 2.7 per cent, belong to this group. Sufficient emphasis has not been placed on this important matter. Patients go to their family doctors with complaint of fatigue and slight fever, and are referred to throat specialists to have a tonsillectomy, or the patient himself goes to the throat specialist who, after an inspection of the tonsils, arranges for their removal. These minor operations do the most damage, for they are entered into casually, frequently without any general examination.

In general hospitals patients are apt to get the advice of specialists in every field except in that of tuberculosis. The care of the tuberculous is a specialty and the public has a right to expect every large hospital to furnish the best available advice in every field of medicine. Where no provision is made for diagnosis of tuberculosis, mistakes made are often regrettable. A patient with epigastric pain applied to a surgeon, the head of a staff of a hospital. No history was taken or general examination made, but a gastro-intestinal x-ray study was ordered. The roentgenologist, in screening the patient, observed an obliterated left pleural cavity with a pneumothorax cavity at the top and the heart and mediastinum drawn far to the left. This report was made, and the surgeon ordered sun baths at home. In three weeks diffuse tuberculosis of the right side developed, the direct result probably of the sun exposures. Sun is a powerful remedy, dangerous in pulmonary tuberculosis and never to be used except under the constant supervision of an expert. Faddisms in medicine are nowhere more dangerous than in the treatment of tuberculosis. Advice of quacks over the radio, and the orange juice fast cure-all of the daily press health column, certainly

do great harm to the tuberculous. Another dangerous faddism is exercise. After the fire in San Francisco and the plague infection the ancient county hospital was burned. Temporarily patients were housed about town, and several hundred found refuge in the reconstructed stables of Ingleside race track; among them patients with pulmonary tuberculosis. A well-meaning medical visitor who knew nothing of tuberculosis suggested to the ward of patients with advanced tuberculosis that nothing could be more opportune than the proximity of a perfectly level measured track of a mile, and that instead of resting constantly in bed, they walk the track twice a day. Thirteen tried it. One died of hemorrhage the next day, and within five weeks two more died, not one of whom had seemed *in extremis* before the fatal exercise. These cases are mentioned to show the danger in well meant advice not coming from an expert.

SUMMARY

1. With the progress of our knowledge of tuberculosis we are more increasingly dependent on auxiliary means of securing rest than on tuberculins and climate, valuable as they are.

2. There is no valid reason why tuberculosis patients cannot be treated in a general hospital.

3. A greater familiarity on the part of the profession generally with various forms of tuberculosis and their modern treatment will be invaluable to the great mass of people, and will end in much earlier diagnosis.

4. Too much emphasis has been placed on climate and tuberculin therapy. The absolute neglect of diagnosis and treatment of the disease in general hospitals is the great weakness of our present organized efforts. We have plenty of beds in most places for lung cases, good care when once patients are landed in these beds, but insufficient attention paid to getting them there during the incipient stage when complete cure is most possible. Follow-up of cases is not sufficient. Teaching about tuberculosis in our medical schools needs improvement.

909 Hyde Street.

DISCUSSION

CHARLES L. MCVEY, M. D. (Great Western Power Building, Oakland).—1. Should the surgeon examine the patient more carefully before enacting surgery?

Yes. Our faith lies in the future; in the hope that the ambitious surgeon will approach his surgery by way of his medical knowledge. Not more knowledge, but more care in history taking and more complete physical examinations are necessary. We get too busy, and then we get careless. "Of all men in the profession the forty-visits-a-day man is the most to be pitied" (Osler).

2. Should the general hospital make staff provision for a tuberculosis "expert"?

Yes. Especially if he be one who devotes but a portion of his energy to tuberculosis diagnosis and treatment. If he deals with tuberculosis exclusively, he is very apt to see tuberculosis too frequently. Except in rare instances, I believe this to be true.

It is a great help to have such a "modified expert" as a check on one's diagnosis and outline of therapy. Artificial pneumothorax should be entrusted to him and to no other.

3. Should tuberculosis be treated indefinitely and until its arrest in a general hospital?

No. The main objection to such a plan is that it is impractical unless (and this may be Doctor Brown's idea) a separate and distinct tuberculosis department be set aside in such a hospital. A separate unit might well provide the education, environment, and armamentarium which should be available in tuberculosis sanatoria. The patients of a general hospital come and go. When convalescing, the association of the tuberculous and the nontuberculous would not help the morale of the tuberculous nor aid in the convalescence of the general medical or surgical patient. The tuberculous patient wants to know and see someone who is similarly afflicted, or at least someone who may spend as long a time as he in getting well.

4. Can tuberculosis be diagnosed in a general hospital?

Yes. It may be trite to say that every modern hospital should be equipped with an armamentarium such as is necessary to establish a diagnosis.

5. Are tuberculosis "experts" always expert?

No. And until such time as tuberculosis experts become more expert, and of a purer mold, we will not speak of the food faddists who have carried on their trade from the beginning of medical history. How can a tuberculosis expert in a period of two minutes make a diagnosis of a tuberculous knee-joint? A patient was stripped to the waist on a cold winter's morning, in the open air, and a diagnosis of tuberculosis of the knee-joint was determined by a stethoscope applied to the chest. The case was later shown to have been a simple traumatic bursitis! This example is to offset (in a way to defend) the experience of the surgeon at the Ingleside race track.

6. What of the overcrowded, advertising type of tuberculosis sanatorium—boarding houses?

In agreement with Doctor Brown, should we not be more careful in sending a tuberculous patient away from home, especially to a questionable boarding house, where he receives poor food and too little nursing care and even less plumbing access?

7. What of antipneumococcic-staphylococcic-streptococcic vaccines? What of tuberculin?

There is no scientific background for the indiscriminate use of mixed respiratory vaccines in the treatment of tuberculosis. I refer to the pneumococcic-staphylococcic-streptococcic mixtures now in vogue. These are administered only to make the patient feel that he is receiving a specific to cure his disease. Ignorant of medical therapeutics, the patient believes there is potency in "a shot." Is it legitimate to encourage him in such a delusion? Tuberculin is losing ground. Therapeutically could we not get along very well without it?

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C. E. ATKINSON, M. D. (Southern Sierras Sanatorium, Banning).—I heartily agree with most of Doctor Brown's conclusions, but ordinarily I do not believe that tuberculosis can be treated to the best advantage in a general hospital, chiefly because the environment and usual location, in or near congested areas, are undesirable. In a general hospital one meets many persons who are misinformed regarding the tuberculosis problem. These include patients, nurses, and physicians, who often indirectly influence those suffering from tuberculosis against taking the cure properly. Often the general atmosphere is decidedly "institutional and cold," and lacking in the friendliness, hope and cheer, which prevail in most well conducted sanatoria.

Yet it is necessary for certain patients to be treated in a general hospital, especially during emergencies

as when thoracoplasty is performed; so the medical personnel should have both adequate training and experience in this line. Sanatoria or hospitals without adequate equipment cannot do full justice to patients, but the most modern equipment is dangerous in the hands of the inexperienced. The diagnosis and treatment of tuberculosis require long experience. The course of tuberculosis is one of years, the average physician does not have opportunity to closely follow many cases to their termination, and may mistake a period of temporary improvement for permanent cure. As temporary improvement is often easily obtained, even in advanced cases, this leads him to doubt the necessity for early diagnosis. Consequently the opportune moment for securing an arrestment with comparative ease is passed by.

Early diagnosis is imperative, but is difficult to make. X-ray examination is highly important, but it is equally important not to rely too completely upon it. The x-ray often fails to register early tuberculosis, and fails to distinguish with accuracy an active from an inactive lesion. Valuable as this agency is, for the expert, it is my contention that those who are not thoroughly familiar with tuberculosis will arrive at a more accurate opinion by paying more attention to the history, symptoms, physical examination, and (bearing in mind that tuberculosis may be present in the absence of bacilli) study of the sputum, and less attention to x-ray evidence. In making an x-ray examination, complete study by means of stereoscopic films and fluoroscopy is advisable. A patient who was slightly run down, recently sought a precautionary examination. The history, physical examination, and x-ray films yielded no definite evidence. On the screen, fluid was at once visualized in the left pleura. More careful scrutiny revealed a partial pneumothorax, which, weighed with other slight findings, led to a diagnosis of tuberculosis. Without screen examination this case would have been missed.

In my experience, tuberculous patients often stand operations surprisingly well, yet the fact remains that surgery for other conditions is often resorted to too hastily and with too little understanding of the patient's entire problem. When border-line tonsils are found a determined effort should be made to ascertain whether these are the main source of toxemia. If the lungs are routinely examined by an expert, many unsuspected cases of tuberculosis will be brought to light and surgery will sometimes be avoided.

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Doctor Brown (closing).—I appreciate very much the criticism of this problem of the tuberculosis division in a general hospital as it has been outlined by Doctor McVey. One sees the casual use of the stethoscope over the heart area of a patient about to be anesthetized and it is presumed in each case that the kidney function has been looked into. How many throat specialists are sure that the tonsils they remove, nearly 10 per cent of which are tuberculous, are not tonsils of persons with some trouble in the lung which is likely to be activated by the anesthetic?

If the proper examinations are made in a general hospital a great many cases who enter for surgery that is clearly indicated will be properly treated for their tuberculosis before the surgery if possible and will be operated on if necessary under conditions that minimize the dangers of anesthetics. If the work in the general hospital is well done, it is bound to uncover a great many cases who have not yet complained of the minimum symptoms from which they suffer.

THE HEART*

ITS CONDITION AS A FACTOR OF SURGICAL RISK

By Eugene S. Kilgore, M. D.
San Francisco

Discussion *by John J. Sampson, M. D., San Francisco; R. Manning Clarke, M. D., Los Angeles; W. C. Smallwood, M. D., Long Beach.*

In examining the heart of a candidate for surgery the average physician is preoccupied largely with the detection of murmurs and high systolic blood pressure; and yet these are undoubtedly two of the least important criteria of surgical risk. They do serve to attract attention to a good many subjects with abnormal circulatory apparatus, and should prompt a careful scrutiny, but beyond this they are of little value. Even if we dismiss the large number of murmurs which are functional and consider only those that represent valvular lesions, experience shows that, other things being equal, patients with valvular disease tolerate surgery practically as well as normal subjects. The same may be said of hypertension within reasonable limits, provided other things are equal.

The other things required to be equal, that is, equal to normal, in these cases are: the rest of the body and particularly the myocardium. The pathologically-minded examiner will base practically his entire judgment of risk arising from the circulatory apparatus upon his estimate of the reserve power, endurance and stability of function of the myocardium. His judgment probably will be influenced by valvular or pericardial pathology, but only insofar as it modifies his view of the condition of the myocardium. The mere presence of valve scars will make him suspect that injury occurred to the musculature when the valves were infected, especially if he recognizes the effects of old rheumatic infection; and the extent of valvular deformity and consequent mechanical handicap may to some extent influence his judgment as to the amount of compensatory changes which have occurred and the amount of reserve power available for emergency use.

DIFFICULTIES IN ESTIMATING MYOCARDIAL CAPACITY

The assessment of the virtues of the myocardium presents many difficulties. None of the numerous functional tests thus far suggested have inspired any general confidence among cardiologists, and there are at least three strong theoretical considerations opposed to the hope that any such tests can ever be decisive for gauging surgical risk.

In the first place, the heart is not like the kidney. The latter can be tested by giving it a task at or even far beyond its capacity for the moment; the kidney takes its time to catch up and no harm is done. But any performance test applied to the heart, to be safe, must of course be far below its capacity.

In the second place, the strain to which the heart is subjected during and following surgery

* Read before the San Francisco County Medical Society on August 21, 1928.

is of various sorts. There is the unfavorable position of the body required by certain operations, disturbances due to mental perturbation and the energy expended in struggling during anesthesia, etc.; and more important than these mechanical effects are the chemical ones—the direct effects of anesthetics and their indirect effects on blood gases, especially the hypoxemia so often induced, and later, such factors as the frequent changes in the metabolism of nitrogen, sugar, minerals. Some of these are known to be related to vomiting, or absorption of products from injured tissue. Alkalosis unfortunately results at times from the overuse of alkalis therapeutically. Other chemical changes but dimly understood undoubtedly affect directly or indirectly the circulation, and constitute a tangled skein of causes and effects impossible to imitate in any functional test of the heart.

Finally there is the variety of ways in which heart failure occurs. The congestive type usually receives foremost consideration because it is the most readily predictable, appearing as it usually does to be an exhaustion phenomenon in an obviously crippled heart. More important because less easily predictable are the failures through coronary disease or disordered mechanism of the heart beat—the sort of failures often vaguely termed "acute dilatation of the heart." It is impossible at present to conceive of any functional test which would reveal a patient's liability to such conditions.

BASIS FOR ESTIMATING MYOCARDIAL CAPACITY

What then is the basis for estimating the ability of the myocardium to withstand surgery? Obviously the judgment is a composite one. Valve lesions should be considered from the point of view of their probable severity, and of the myocardial work hypertrophy and dilatation and diminution of reserve power which have followed. Loudness of murmurs has comparatively little significance for this purpose. More important are modifications of heart size and heart sounds. Thus a clear aortic second sound indicates a comparatively good function of the valve even when there is a loud diastolic murmur. In conjunction with the history, the kind of valve lesion furnishes, as a rule, an indication of the probable etiology and therefore the probable preëxistence of myocardial infection. Mitral disease, especially stenosis, or mitral and aortic disease is usually due to rheumatic infection; and in these cases the myocardium may be assumed to have shared, more or less, in the original infection. Aortic disease alone appearing in adults is usually syphilitic, and always suggests the danger of sudden death from interference with coronary circulation or direct involvement of the musculature.

Blood pressure should also be considered in its relation to the myocardium. Systolic pressure may be high without materially increasing surgical risk if the diastolic pressure and heart size are nearly normal, kidney function good, and effort well tolerated. High diastolic pressure, on the other hand, is an important warning signal, and is usually found associated with cardiac enlargement, limitation of effort and with other evidences of myocardial impairment.

Disturbances of the heart-beat mechanism implicate the myocardium directly. Simple premature contractions, especially those arising in the ventricle, are in themselves of little moment. Paroxysmal tachycardia, flutter, and auricular fibrillation are usually expressions of myocardial disease; but this may be trivial in amount, and each case must be judged on its own merits. Especially important is the capacity for effort during the abnormal heart action; and if the arrhythmia is paroxysmal, the circumstances if any, which are known to precipitate attacks, and the probability of their occurring during or after operation. Heart-block is usually more serious, but some patients, especially those with long-standing complete block, tolerate effort and surgery remarkably well. Alternation of the pulse in a not very rapidly beating heart is always an ill omen.

The character of the heart sounds is important. One learns to beware of sounds of feeble muscular quality, or certain gallop rhythms suggesting bundle branch block, and of a shortened diastole in comparison with systole.

The x-ray and the electrocardiograph are important aids, usually as confirming clinical impressions already made, but at times supplying the principal evidence of cardiovascular disease. Heart size is an important item; it is indicated often with considerable inaccuracy by percussion and with quite satisfactory accuracy by the orthodiagram or teleroentgenogram. In the electrocardiogram the indication of ventricular preponderance, of conduction deficiency in the bundle or its arborization, deformed T waves, etc., are often found decisive indices of coronary and myocardial disease. Perhaps too much was expected of the electrocardiograph at first. Then when the realization came that this imposing machine alone would not supply a complete heart diagnosis some disappointment was felt, and it was comparatively little used. Now, with the advent of portable and easily operated machines, its use is becoming more general. Some of these smaller machines utilize the original principle of the string galvanometer and produce records fully as reliable as those of the large hospital machines.

This brief survey of technical clinical methods for estimating surgical risks arising from the heart will be disappointing to those who like simple rules of thumb. I intend it to be so, for I do not believe there is or is likely to be found any such rule which is reliable. We should go further and frankly admit that all the laboratory and instrumental methods put together, including auscultation with the stethoscope, are of less value than another and as yet unmentioned part of the clinical examination. It is the exercise of a faculty well recognized and much sought for in medical education and practice, but hard to get or even to name satisfactorily. It is present to a considerable extent in "the man in the street" and is highly developed in many horse traders and athletic trainers who know nothing of medicine. So-called scientific medicine does not develop the

faculty which these experts possess, but on the contrary appears at times to dwarf it. Robert Graves [1] in commenting on the rejection for the British army by medical officers of Jimmy Wilde, the fly-weight boxer, states that he and T. E. Lawrence, about whom there was also some question as to physical fitness, were perhaps the two strongest men in England in 1914—strongest in the sense of being best able to carry on under the handicaps of wounds, broken bones, bacterial and protozoal infections, excessive and prolonged physical effort, starvation, heat, cold, and general hardship.

Throughout the examination to determine surgical risk, and while giving full weight to the results of technical tests, the examiner should nevertheless direct his major effort toward the correct estimation of the general stamina of the patient, both physical and mental. Age should be considered in terms of preservation rather than of years. Bodily habitus, weight, and especially recent weight changes, complexion, texture of skin and muscles and habits of activity, should be noted. Ability to meet comfortably sudden physical strains and endurance tests of ordinary life are especially important.

The wish to die, the conviction of impending disaster or the simple yellow streak are bad omens of varying gravity. Good morale, on the other hand, at times seems to be the deciding favorable factor in a critical situation. I shall never forget a very old, weak-looking woman with brittle arteries, hypertension, myocarditis, and nephritis, who entered the hospital with a ruptured appendix. The surgeon felt that any operation would be hopeless and would add to her discomfort. But when we announced to her our intention of giving medicine to relieve her pain she gave us a piercing look, and said she understood there was pus in the abdomen and that she intended to have it removed and get well. Her determination was rewarded by an entirely successful operation and convalescence.

490 Post Street.

REFERENCE

1. Graves, Robert: "Lawrence and the Arabs," Jonathan Cape, London, 1927.

DISCUSSION

JOHN J. SAMPSON, M. D. (490 Post Street, San Francisco).—Doctor Kilgore has most aptly emphasized the unimportance of valve lesions contrasted to the importance of myocardial pathology as an index of the heart's capacity to withstand surgery. The carefully taken story of either progressive dyspnea or heart pain on exertion is thus of much greater importance than anything that the stethoscope can tell us. Such is not the case in lung disease, and the surgeon cannot be blamed for retaining his respect for abnormal pulmonary signs in modifying his operative technique.

Physical strain, circulatory shock, and mental strain are well recognized by the surgeon, but he generally demands the internist's view on the influence of anesthetics and the choice of anesthetic for the particular case.

Two factors are involved in any general anesthesia: the direct toxic effect of the anesthetic on the heart muscle, and the production of anoxemia or hypoxemia. Perfusion experiments have demonstrated the direct toxicity, and it is well known that chloroform is especially dangerous for this reason.

Ether, ethylene and nitrous oxid have a low comparative toxicity to their anesthetic qualities.

The effect of anoxemia is twofold: first, the immediate damage to all tissues, heart muscle inclusive, probably from the toxicity of imperfectly oxidized metabolites and certainly from the shift of tissue reaction toward the acid side. Carter and his collaborators have produced auricular ventricular block and aberrant rhythms by acid perfusates; secondly, anoxemia necessitates a greater output of the heart per minute in an attempt to supply the tissue with sufficient oxygen. Such has been shown to throw more load on a heart than is customarily believed.

Nitrous oxid-oxygen anesthesia, while one of choice in pulmonary disease, because of the almost unfailing accompaniment by anoxemia, is not ideally suited to use in heart disease.

It is surprising how well ether and ethylene are borne by patients who are not in extreme congestive failure. This should not surprise us, since their toxicity is low and anoxemia is rarely produced. Ethylene is nearly as free of irritating qualities as nitrous oxid and, therefore, should frequently be the anesthetic of choice, since pulmonary infection so often accompanies heart disease and ether cannot then be used.

Thus, by elimination, the cardiac indications for local anesthesia are few and its use should be determined rather by the surgical requirements of the case and the mental attitude of the patient.

A word relative to cardiovascular treatment of surgical cases. It is my belief that no drug is so often applied worthlessly as is digitalis, during and succeeding surgical operations. Recognition of surgical shock as a phenomenon of the peripheral vascular bed makes the pre- and postoperative use of digitalis in its treatment without rationale. Yet thousands of ampoules are used intramuscularly and intravenously daily in operating rooms. Likewise, the popular delusion that digitalis will slow any rapid pulse is responsible for much waste of this drug. Myocardial failure, either gradual or acute, is its chief indication and when saturation is reached and sustained the results will confirm such use.

Quinidin has not gained sufficient recognition for its value in postoperative cardiac therapy. It is here that paroxysmal auricular fibrillation frequently occurs, as shown in nursing records of periods of rapid, irregular pulse. Quinidin will act specifically on such irregularities, and in the doses necessary for its use here is practically free of any dangerous effects. I believe that the contraindications to quinidin have been greatly exaggerated.

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R. MANNING CLARKE, M. D. (319 Hollingsworth Building, Los Angeles).—Nonvalvular heart disease has become the question of the hour with the cardiologist. This may well be so. The surgeon feels his great debt to the pathologist, but the cardiologist may well feel just as big a one, for it is through this source that he has learned the true importance of the cardiac cripple who presented no classical symptoms or signs of "heart disease" as it has been known in the past. The clinician has learned from the necropsy that the dangerous heart disease has been hidden from him more thoroughly than he had realized (therein lies its danger). Thanks to this realization there is arising a more intimate knowledge of the resources of the heart and how they are damaged. Doctor Kilgore's paper on the cardiac surgical risk is a terse, concise setting forth of nonvalvular heart disease and how it may be recognized.

I would like only to mention some things with which I am immensely impressed at the passing moment. First, I do not feel that even yet we are properly impressed with the importance of rheumatic heart disease. I feel that it is wrong to speak of rheumatic endocarditis, for I do not think any such thing exists, as a separate entity. Rheumatic heart disease is a pancarditis and its valve-crippling ability very

poorly expresses to a clinician the basic injury and loss of function suffered by that heart. Doctor Kilgore has set forth in his paper the importance he attaches to a thorough search for the more hidden damage of this and many other similar injuries.

Next I find a great interest just now in the different ways in which an electrocardiogram may suggest to us that the patient has coronary disease, which is, of course, inseparably connected with myocardial disease. Kilgore mentions ventricular preponderance, bundle conduction deficiencies and deformed T waves. I have been following with great interest of late the contention of Herrick, Brooks, and others, that the too rapid lead-off of the down stroke of the R wave is of importance in this respect. So far I am impressed that it is of much importance. Necropsies on cases that have been thoroughly studied will eventually provide us an answer to this and many other important questions.

I wish to agree that oftentimes our complicated system of medical education does dwarf our true perspective of the art of medicine. It is many times true that the great clinician with a broad vision and ability to lead in the field of medicine often comes through his schooling with this faculty in spite of his training, not because of it. We may some day find a better system and curricula than we have at present.

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W. C. Smallwood, M. D. (817 Security Building, Long Beach).—Doctor Kilgore has properly emphasized the difficulties of assaying by definite rules the ability of the heart to withstand the strain of surgical operation.

Heart murmurs, in general, have again been cast in a rôle of minor importance, and justly so, for their significance in cardiac prognosis is still much exaggerated by the mass of the profession. Nevertheless the demonstration of a diastolic murmur is a matter of the first moment, calling clearly into mind the existence of definite pathology in which the heart's action as a whole is profoundly concerned. The mechanical disadvantage imposed on the heart by the lesions responsible for these murmurs is usually a considerable one; especially if unusual, sudden, or prolonged strain is to be encountered.

Aortic syphilitic disease, especially if untreated, is a dangerous handicap to a prospective surgical risk; much less dangerous is the well-compensated aortic insufficiency either of rheumatic or sclerotic origin. Mitral stenosis is always a lesion of gravity where surgery must be undertaken, but the risk varies greatly according to the implication and condition of the myocardium.

Patients with hypertension where the diastolic reading is 130 or more, especially if associated with definite renal changes as is most usual, are particularly bad risks and prone to develop sudden and often fatal attacks of pulmonary edema in the first forty-eight hours postoperative.

The electrocardiogram is of distinct value in assisting our judgments, but of the very greatest service in elderly people, where it may bring forth clear-cut evidence of intrinsic cardiac nerve damage, intrinsic cardiac circulatory damage, or marked muscle change, whereas ordinary examination might fail to disclose or barely hint the extent of this portentous pathology. Certainly the estimate of cardiac reserve power in degenerative heart disease is the most difficult problem with which we must deal. The quality of the heart sounds, the appreciation of which cannot be exactly conveyed in words, is of considerable importance to the trained observer. A shortened first sound, a flattening of its timbre, and a weakening or muffling at the apex, contrasted if need be with the first sound at the right sternal border, are not reassuring signs. Careful inquiry as to previous reactions to strain, especially the production of breathlessness on exeration or of pain, oppression, or constriction in the precordial region or areas of cardiac reference sensation, are danger signals never to be overlooked.

I have been surprised at the ease with which chronic fibrillators meet the strain of a necessary surgical operation. If the fibrillation is associated with mitral stenosis, however, the outlook is considerably more grave.

The dictum so clearly enunciated in this paper, that our estimation of the risk involved in a given case is to be based particularly upon the reserve power of the myocardium, is, I think, the fundamental criterion. This estimate can be approximated, often, unfortunately, with considerable inexactitude, only by a careful weighing of all the evidence at our command. It is in this weighing that experience and soundness of clinical judgment are so important. The whole problem is a difficult integration, and Doctor Kilgore's article is a most thoughtful analysis of its varied features.

THE LURE OF MEDICAL HISTORY

PHARMACY OF THE ANCIENT EGYPTIANS*

A Translation from the Esperanto

By J. Van Becelaere, M. D.
San Diego

IN studying pharmacy from the standpoint of concrete historical reliquiae we find a wealth of exact observation and cumulative experience, alongside of stark superstition and miracle-working practices. The history of pharmacy, in the form of documents that hark back to the mythical times of remotest antiquity, rightfully begins in Egypt, a country preserving earliest indications of civilization, culture, and art.

According to historiographers the first Egyptian dynasties date back sixty centuries before our era. Earliest medical writings recorded are of the same period.

The records concerning Egyptian pharmacy are preserved in the so-called "Hermetic books" of Thoth—the Egyptian Hermes—the discoverer of sciences and arts. Only six of these forty-two holy books are of medical import.

A second valuable source of information is found in the papyrus of Ebers, originating in Egypt, and preserved at the University of Leipzig.

The papyrus of Ebers consists of one hundred and ten pages, twenty-two lines to a page, and bears the superscription: "A Book for the Preparation of Medicines for All Parts of the Body." It is dated in the seventeenth century before our era. It prescribes remedies for external and internal diseases, together with formulated prayers and incantations. For example: "Let, therefore, Izodo heal me, as he healed Goro from his pains at the time Seto killed his father Osiris." This quotation refers to the victory of Goro over Seto—the victory of Good over Evil.

Egyptian medical practice was of two orders: (1) The Superior, or Magic, consisting of incantations, prayers for the removal of sortileges, and commentaries on oracles; and (2) the Customary Dogma, or common practice.

Magic Medicine.—This order of practice was the prerogative of the higher clergy, to whom alone was vouchsafed the privilege of studying

* Translated from "Internacia Medicina Revuo," November 1928, pp. 642-644.

the first thirty-six Hermetic books. For the healing of disease these priests enlisted the powers of the Dekans—aerial beings, demons that acted as intermediaries between the gods and mankind, and were endowed with the power of creating vegetables and animals. Thirty-six of these Dekans presided over thirty-six parts of the human body, life and health depending upon their benevolence. Hence there were special formulae for propitiating them, and thus the custom originated in Egypt that they had a special healer for each individual disease, since each part of the body, being subject to a different divinity, required for its healing in time of disease the intervention of a different priest.

Magic medicine, furthermore, was the recognized method of treatment in the holy temples of Izodo, where the sick received during their sleep—in the form of dreams and oracles—the revelation of remedies required for the cure of their condition. The priests of Izodo (Isis ?) invoked the healing forces of nature, which they enlisted by arousing a state of profound religious enthusiasm. Hence the essential agencies of a magic cure consisted of prayers and incantations.

Best known among divinities concerned with the healing of disease were Ptah, his son Hotep —the Egyptian Esculapius, and Thoth, mentioned above.

The clerical caste were held to a strict and ritualistic mode of living which prescribed moderation in all things, extreme cleanliness and bathing, both daily and nocturnal.

Severe hygienic precepts also ruled the entire population, which, in conjunction with excellent climatic conditions prevailing, made of the Egyptians the healthiest among ancient peoples. Thanks to their hygienic mode of living and their knowledge of medicine, the Egyptians came to be highly considered by outlanders, who rated every one of them as being a physician.

Both medicine and pharmacy stood in high regard in Egypt, their physicians practicing numerous specialties. Those concerned with the preparation of medicines were called "pastophoral." There also were "farmakopoloj" (according to the Greek nomenclature)—magicians dealing in secret preparations—and "farmakodikoj," who combined sortileges, incantations, with the use of healing remedies.

Common or Dogmatic Medicine.—This order of practice was in the hands of a lower caste of clergy who were allowed to study but the six last Hermetic books—"Embre"—and held to meticulous observance of the prescribed remedial directions. Noncompliance with the precepts therein contained, at times entailed capital punishment, though when a patient died after treatment strictly conforming with the regulations and directions of Embre, the misfortune entailed no consequences to the practitioner.

Ancient Egyptians were familiar with numerous medicinal products and their various forms of preparation. They regarded opium as a chief remedial agent, as also scilla, and that complex preparation called "Kyphi," a well-known fumigant prepared in form of aromatic globules.

Formulae for the preparation of fumigants were numerous. Among the best of these was rated a combination of dried-grape wine, galanga root, juniper berries, aromatic calamus, mastix, grapes, and honey.

Various animal and vegetable substances were in general use as medicines. For example, different grains used in bread making, fruit of the cedar, palm wine, beer, honey, vinegar, milk—both human and goat—human urine, the excrement of dogs, cats, lions and crocodiles, beef gall, the fat of all sorts of animals, lizards, for instance. The properties of bitter gall of fish and some of our own modern-day poisons, such as strychnia, were also known.

Among metallic medicines they sometimes employed cerussa—the basic carbonate of lead—as also the crystallized copper acetate.

Juice of the Corchorus anagallis—before it came into bloom—was used against the bite of serpents, different skin diseases, and corneal opacities. The juice of this plant was used to effect a dilatation of the pupil, and was recommended in various salves for the improvement of the eyesight.

Erysipelas was treated by frictions with urine of women, and the excrement of donkeys. Against a disease they called "avunes" poultices of ox and bird gall, and the tail of donkeys ground up, in oil, were recommended.

Prescriptions for fever, itch, and even for diseases of the spine were in vogue.

Medicines were exhibited in the form of ointments, plasters, washes for wounds, poultices, enemata, decoctions, and pills. Of pills the Ebers papyrus describes two sorts: those with honey, for women, and those without honey, for men.

During the preparation of medicines (which entailed the observance of meticulous directions) and also before their use, special forms of prayer were spoken.

Egyptians knew more than eighty different sorts of medicinal plants. Absinth, which was called "vulture's heart," was extensively cultivated, as were also Carthamus, Chelidonium, Coriander, Cyperus esculentus, Hyoscyamus, Strychnos, and Trifolium. Castor beans, which were called "neter kaka," and specimens of which have been discovered in sarcophagi dating from more than forty centuries before our era, were used internally by the Egyptians. Indigo was well known as a coloring material. From the poppy, opium was prepared; and the city of Syki, around which was conducted an intensive cultivation of the Papaver somniferum, was called "Mekone," the city of poppies. The Crocus orientalis was called "blood of Ares," and was held in high regard.

Egyptian pharmacy exerted a tremendous influence on that of the Greeks, in fact upon pharmaceutical practice of the entire world. However, from the time when Alexander of Macedonia

brought war to Egypt, and during the reign of the Ptolemies, ancient Egyptian pharmacy gradually gave way to the Greek practice, though for centuries thereafter the city of Alexandria remained a most important center of pharmaceutical development.

625 Broadway.

TRIBUTE TO DOCTOR JOHN F. BINNIE OF SAN DIEGO

CALIFORNIA BIOGRAPHICAL HISTORY

FROM the San Diego *Union* is taken the following:

"Eulogized by no less an authority than Dr. William J. Mayo, as a man who has given his country something more precious than life, Dr. John F. Binnie, noted surgeon whose health was broken in war work and who is an invalid at the naval hospital here, was honored by the California Medical Association at the general meeting of the fifty-eighth annual session at Hotel Coronado.

"The assemblage was a special one and was called the John F. Binnie meeting. Doctor Mayo presided and gave an address in honor of the great surgeon whose life work has been a beacon light to others in his profession. Doctor Binnie's accomplishments were sketched by Doctor Mayo, a fitting tribute by one great surgeon to another. Doctor Mayo said:

" 'It gives me great pleasure to take a part in this *Festschrifte* in honor of my old friend, Dr. John F. Binnie, whom I have known intimately, inside as well as outside, for more than a quarter of a century and of whose character and work I can speak from personal knowledge.

" 'John F. Binnie, born in Stirling, Scotland, the son of a Presbyterian minister, had the benefit of the virtues and economies of an austere religion when it was in its glory, but at a time when the kindliness and charity of the Man of Galilee, whom we all serve, had perhaps been forgotten.

" 'Doctor Binnie once told me, in a reminiscent mood, that he remembered as a small boy sitting in the church on the hard seats listening to almost endless discussion of doctrines, and hearing for the first time that Christ was a Jew. When he walked home with his father after the services, he said: "Father, I knew that God was a Presbyterian, but I didn't know that Christ was a Jew."

" 'The effect of that early religious education can be illustrated by a story that he told me when he returned from the war. He said that the division to which he was surgeon had three chaplains—a Presbyterian, a Methodist, and a Catholic—and that during the tragedies of the war these three men found themselves closely drawn together in their work among the wounded and the dying. When the war was over and they were to separate to go home, the Presbyterian minister, in bidding the others good-by, referred to their mutual work in the division and said: "Little did I think that the time would ever come that I should meet with a Methodist and with a Catholic on terms of equality, but we have been broadened and we all have been doing the Lord's work, you in your way and I in His way."

" 'I speak of these things because the qualities that have impressed me most in my association with Doctor Binnie have been his humor, his charity, his loyalty to his friends, and his tolerance.

" 'Doctor Binnie, educated in Aberdeen, came from the Scottish school of surgery which has always been recognized as the anatomical school, surgery based on anatomy. Nowhere in the world are finer surgical dissections made than in Scotland. France is the only country that has accomplished work in surgical anatomy at all comparable with that done in Scotland. The French have the intuition, the ready marshaling, almost subconsciously, of their knowledge, and the brilliant technique which produced a Pasteur. The German school of surgery is based on pathology, patient study of the minute, industry in gathering together the smallest facts, the school which produced a Virchow. England is distinguished by the school of clinical investigation, the school that produced Richard Bright, Thomas Addison, and Osler.

" 'John Hunter was a Scotsman trained in England, Lister an Englishman trained in Scotland. Each was an anatomically trained clinical investigator, and marked an epoch in the science and art of surgery.

" 'Doctor Binnie reads French and German, and has a working knowledge of the literature of Spain and Italy. He has traveled widely. He came to the United States at a fortunate time for us. His great worth as a surgeon and as a teacher was recognized by the American medical profession, and he aided the American school of surgery to become, in the best sense, cosmopolitan. He is an honored member of all the great surgical associations. His words in discussion always have been listened to with respect, and he is beloved personally by the practitioners of our art.

" 'As a writer Doctor Binnie is seen at his best in his many articles on surgery published in medical journals, and as the author of a great textbook on operative surgery. Written with the precision and clear understanding of Greig Smith (author of a textbook on abdominal surgery), with the judgment and surgical philosophy of Jacobson (author of a textbook on operative surgery), in his own inimitable style, Binnie's "Manual on Operative Surgery" has no equal in present-day literature. In it he has given only brief descriptions of the common operations such as may be found in any standard textbook, but for the proper surgical procedures in little known and rare diseases and conditions and their complications, one turns to Binnie's Operative Surgery with a confidence which is justified.

" 'When during the Great War the surgeon-general's office asked Doctor Binnie to go abroad to take charge of a surgical division which was having internal dissension and troubles, he went

to the front with magnificent courage and with that tact and tolerance which one would expect from him. The result has been our greater knowledge of war surgery. He returned home, having given that which is more precious than life, his health, for the country in which he was born and the country of his adoption.' "

CLINICAL NOTES, CASE REPORTS AND NEW INSTRUMENTS

AGRANULOCYTIC ANGINA

REPORT OF CASES

By JOHN MARTIN ASKEY, M. D.
Los Angeles

AGRANULOCYTIC angina is a clinical syndrome associated with actual or functional aplasia of the granulocytic centers of the bone marrow. The blood shows a typical dearth of granulocytes. Usually oral lesions are present. Instead of a distinct clinical entity, it has been more recently regarded as a syndrome which may be produced by any myelotoxin acting primarily on the granulocytic centers. In the majority of cases, however, the cause is obscure.

Arsenic poisoning has produced the clinical picture.[1] [2] If the bone marrow involvement affects the red centers and the platelet centers, a rapidly progressive aplastic anemia with bleeding symptoms occurs.[3]

Duke [4] considers agranulocytic angina as merely a type of aplastic anemia with selective action on the granulocytic centers, fulminating infection usually causing death before further bone marrow involvement occurs. The anemia of aplastic anemia thus usually does not develop.

We wish to report three cases, of which two recovered, and one progressed to death from an aregenerative anemia.

REPORT OF CASES

CASE 1.—Mrs. H., age forty-one, entered Saint Vincent's Hospital December 4, 1927. For the past year she had not been well, tiring easily. In April 1927 she suffered from bilateral furunculosis of both external ear canals. This finally responded to administration of an autogenous vaccine. While at dinner on Thanksgiving Day she noticed a scratching sensation of the throat. This continued for a week without great pain or discomfort. Dr. William Walters then observed slight erosion of the arytenoid cartilages but no tonsillar or pharyngeal lesions. The next day her temperature rose to 104 degrees, she had a severe chill, and was removed to the hospital. She complained of severe headache, pain in the back, and nausea. Swallowing now was extremely painful, and examination revealed shallow punctate aphthous-like erosions over the tonsils and buccal mucosa. Blood count on December 5 revealed 2.77 million red cells, 1590 white cells, with 34 per cent polynuclear cells and 66 per cent lymphocytes. Urinalysis showed moderate albuminuria and hyaline and granular casts. There was moderate anisocytosis and poikilocytosis. There was no apparent platelet reduction on the smear. The bleeding and clotting time were normal, the clot retracted normally, and the tourniquet test was negative. Blood Wassermann test was negative.

Physically the patient was a frail woman obviously anemic without any petechiae or purpuric spots. There was no bleeding or oozing of the gums. There were no cervical or inguinal gland enlargements nor was the spleen palpable.

On December 5, her condition being precarious, she was given 500 cc. of 10 per cent glucose solution intravenously. Fever continued between 103 and 104 degrees. On December 9 she was given a direct blood transfusion of 275 cc. without improvement. Again December 11 she was given 300 cc. of blood by direct transfusion. She became worse; the ulcerative lesions involving more of the mouth and lower lip. Smears of the throat had shown no Vincent's spirochetes nor fusiform bacilli. Cultures revealed only a pure culture of ***Staphylococcus albus***. Blood cultures had shown no growths.

At noon, December 14, she suddenly became worse, her pulse accelerated and became weak, vomiting came on, which continued throughout the afternoon. In the evening she became stuporous and seemed moribund. The temperature was 102 degrees. The pulse was 130, weak and compressible. The condition seemed hopeless and, as a forlorn hope, adrenalin (10 minims) hypodermically every three hours was ordered. It had been used formerly in a case of aplastic anemia and apparently had stimulated the bone marrow.[8] Coincidentally, she improved, the temperature the next day was normal, the patient was mentally alert and her vomiting had stopped. The ulcers of the mouth and lip gradually disappeared and were gone by December 19. There was a slight increase in the total white count to 2385, and a relative increase of the granulocytes to 48 per cent. It appeared that the patient was recovering.

On December 21, after a week of normal temperature, she developed a crop of sore, tender nodular lesions on the arms, head and neck, typical of erythema multiforme. Temperature rose to 101 degrees. She developed aching pain in the elbows and knees.

On December 31 she again complained of sore throat, and examination revealed a grayish white membrane over both tonsils. It was a dirty, ragged membrane, differing from the aphthous-like ulceration of the former throat involvement, and would have suggested diphtheria if seen for the first time. A throat culture was negative for diphtheria, but a pure growth of ***Staphylococcus aureus*** was obtained. Smears were negative for Vincent's spirochetes or fusiform bacilli. The membrane spread during the next four days, then began receding, and on January 9 was entirely gone. The erythematous nodules had disappeared and the temperature had dropped. On January 12 the white count was 3329, the granulocytes had risen to 56 per cent, and hemoglobin was 56 per cent. Subjectively, the patient had no complaint save weakness. Despite subjective improvement, however, weakness and a pallor were definitely increasing and a red count on January 15 revealed 2.04 million cells. On January 15 liver extract was started by mouth and continued daily. On January 18 the red cells were 1.55 million, the white count 1460, the hemoglobin 35 per cent, and the granulocytes reduced to 44 per cent. There was marked achromia, but little or no variation in size or shape. There were no nucleated red cells; the platelets apparently were decreased. A rapid destruction of red cells was occurring without any attempt at regeneration by the bone marrow.

On January 20 the red cells were 1.15 million. The lips and mucous membranes appeared bloodless. Increased fragility of the red cells was demonstrated in salt solution, laking occurring in a .5 per cent salt solution, with complete hemolysis at this concentration. A transfusion of 300 cc. of whole blood on January 21 failed to help her. On January 24 a rectal ulcer appeared and became deep and necrotic in the next few days. On January 26 she again was transfused which was followed by a chill. A count on January 30 showed only a .9 million red cells. The patient lapsed into a semicomatose condition, arousing at intervals. On February 17 minute petechiae first appeared under the tongue. The last blood count on February 24 showed .78 million red cells, 1400

white cells, 15 per cent hemoglobin with 60 per cent granulocytes. She died later that day. The necropsy showed the signs of tissue exsanguination, a spleen enlarged three times the normal size and long bone marrow replaced by fat, apparently aplastic. No sternal bone marrow was obtained.

* * *

CASE 2.—Mrs. R. C., age fifty-one, a housewife, nursed her husband, who was sick with influenza. She became sick, went to bed but was up in two days. One week later, on December 31, 1927, she suddenly was taken sick with sore throat and aching muscles. On January 1 she had a fever of 102 degrees, and was seen by Dr. R. C. Woodhull, who sent her to Saint Vincent's Hospital. Her throat showed a grayish white spotted membrane on both tonsils. There were two small aphthous-like ulcers on the roof of her mouth. She had a fever of 102 degrees which rose to 103 degrees the following day. A blood count revealed 2067 white cells with no granulocytes seen in a differential count. The red cells were 4.2 million with 70 per cent hemoglobin. On January 4 the temperature was normal. On January 5 the white count was 954, but 26 per cent of granulocytes had appeared. The tonsillar membrane had gradually softened and on January 5 practically was gone. On January 7 the patient was discharged insisting she felt well, but the white cells still were 2000 with only 28 per cent granulocytes. A smear of the throat had given a pure culture of *Staphylococcus albus*. In view of the definite reduction of granulocytes and the throat lesions the diagnosis of agranulocytic angina seemed justified.

The patient was readmitted on August 11, 1928, on Dr. A. S. Granger's service. Since her discharge she had failed to regain strength fully, spending a great deal of time in bed. She had had numerous slight attacks of sore throat, but never bad enough to call a doctor. Examination showed her to be frail and undernourished. The tonsils were small, but there were a few small ulcers present on the roof of the mouth. She complained of rectal pain, and examination revealed a small hemorrhoidal tag with a small ulcer at the base. The temperature on admission was 101 degrees, dropping to 99 degrees two days later. The blood count showed 4.9 million red cells, 8900 white cells with 67 per cent granulocytes and 33 per cent lymphocytes.

On August 23 her white cells were 3925 with 58 per cent granulocytes. On August 27 they had dropped to 3000 with 54 per cent granulocytes. Her temperature had been normal for a week. The rectal ulcer had healed and she was feeling fairly strong. It was believed that her infected tonsils possibly were responsible for her repeated attacks of sore throat and that her condition was as good as it ever would be. Accordingly a tonsillectomy was done by Doctor Woodhull on August 28. The tonsils were found to contain pus. On September 2 there were 4293 white cells with 52 per cent granulocytes. Her throat healed gradually, without hemorrhage. On September 11 she was discharged with normal temperature and her mouth and rectal ulcers healed. Since then she has felt fairly well but with her strength still not up to normal.

* * *

CASE 3.—Mrs. R. A., age forty-six, a secretary, on September 9, 1927, was suddenly taken sick with high fever and aching muscular pains. She had a chill at this time and complained of sore throat. She was seen on September 10, 1927, with what appeared to be follicular tonsillitis. She was in bed seven days, made an uneventful recovery and returned to work September 19, feeling well. On September 22 she again became sick with sore throat and fever of 102 degrees. There was daily afternoon fever and the gums became red and intensely swollen. A laryngologist prescribed sodium perborate and neosalvarsan, locally. She became steadily worse, however, and was sent to the Hollywood Hospital, October 3, by Dr. George D. Ruth.

Her past history was irrelevant save for repeated attacks of tonsillitis. A blood count revealed 3.47 million red cells, 65 per cent hemoglobin, and a white cell count of 2100, of which 90 per cent were small lymphocytes, four large mononuclear and six transitional cells. Not a single granulocyte was seen. There was moderate albuminuria with an occasional hyaline cast present.

A smear from the gums and throat revealed numerous spirochetes of Vincent's and fusiform bacilli. Blood Wassermann was negative. The throat was injected without any definite membrane present. The gums were swollen and soft. There was no generalized or significant localized adenopathy; examination of the lungs and heart showed no abnormality. There was no splenomegaly. Repeated white counts showed approximately 2000 cells. Not a single granulocyte was seen until October 10, when four polymorphonuclear neutrophils appeared. A diagnosis of agranulocytic angina had been made immediately following the first blood count. Due to the uniform fatality of the cases reported prior to that time, there was little choice of therapy. Empirically, leukocytic extract was given in daily injections with the faint hope that a favorable action in stimulating the bone marrow might result. On October 10 the white count was 2600. The next day it had risen to 4400, polynuclear cells 36 per cent, with lymphocytes reduced to 58 per cent. On October 15 white cells were 7400, polynuclear cells increased to 62 per cent. A vaginal smear taken on October 12 showed numerous spirochetes of Vincent's and fusiform bacilli. There was no ulceration present, however. The throat improved rapidly, the temperature dropped to normal and the patient was discharged in fair condition on October 26. The white count at this time was 5000 with 60 per cent granulocytes. Her strength returned slowly, but she was able to resume her work November 20. Since that time she has remained continuously at work. She does not feel strong or physically up to normal, but there has been no return of sore throat or fever. White counts have ranged from 3100 in March 1928 with 76 per cent lymphocytes, to 10,000 in June 1928 with 47 per cent lymphocytes. Smears from her gums repeatedly have shown Vincent's spirochetes in spite of treatment.

COMMENT

These three cases have many points in common. The patients were middle-aged women, undernourished and relatively in poor health. Patients previously reported in the literature usually have been physically below normal. It is interesting to note that bone marrow aplasia experimentally follows simple starvation in pigeons.[5]

Duke [4] reports a case with chronic aplastic anemia from continued undernutrition. Here a concentrated diet of liver and vitamins produced a rapid recovery. It is plausible that continued poor health might render a normally resistant bone marrow vulnerable to a toxin with a resulting aplasia first affecting the granulocytes. Liver extract failed to cause improvement in the first patient, but it was given late. The aplasia in that patient was progressive, apparently involving gradually the red centers with a resulting progressive aregenerative or aplastic anemia. Whitehead's patient developed a similar rapid anemia.[6] Two of the patients recovered but have continued in poor health. The condition is not uniformly fatal as was at first believed, recoveries having been reported in more recent reports. There apparently exists, therefore, a mild type of agranulocytic angina going on to recovery, and occurring usually in asthenic middle-aged women. That the bone marrow vulnerability lingers is suggested in

the report of a case by Moore and Wieders [7] with recovery from one attack and recurrence, with death later.

CONCLUSIONS

1. Three cases of agranulocytic angina are reported; one progressing to an aregenerative or aplastic anemia.

2. Agranulocytic angina probably is a symptom complex belonging in the same category as aplastic anemia. It may be idiopathic or secondary to a known poison.

3. There are patients who have mild attacks of agranulocytic angina with apparent recovery, but they continue in poor health.

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THYROID GLAND ENLARGEMENT

ITS INCIDENCE AND OTHER PHYSICAL DEFECTS IN TWENTY-FIVE HUNDRED AND SIX SCHOOL PUPILS

By E. L. HANSEN, M. D.
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A TOTAL of twenty-five hundred and six students in the Logan, Utah, public schools were given a comprehensive physical examination during the 1926-1927 school year. The students examined included high school, junior high, and grade school pupils in numbers of 614, 464, and 1428, respectively. Ages ranged from 6 to 18 years.

Of the 2506 pupils examined, 1271 were girls. Of these, 589, or 46.3 per cent, showed various degrees of thyroid hypertrophy. The remaining students were boys, a total of 1235, and these showed some degree of thyroid enlargement in 275 cases, or 21.2 per cent. The general average of enlargement for both sexes is 34.4 per cent.

In a report by McClendon, Hathaway, Vandersluis and Dahl,[1] the iodin content of water in Logan, Utah, is given as 40 parts per 100 billion.

Reports from Other Places.—For purposes of comparison it may be said that Mustard and Warring,[2] in reporting thyroid enlargement in children in Rutherford County, Tennessee, stated that it occurred in girls in 12.3 per cent of cases and in boys in 5.5 per cent of cases, or a general average of 9.7 per cent.

D. F. Farrar,[3] chemist to the Tennessee geological survey, reported iodin content of water from three sources in Rutherford County as 12, 14, and 16 parts per 100 billion parts, respectively.

Out of 12,405 children in twenty-eight districts in Connecticut,[4] 6608 were girls with 29.4 per cent thyroid enlargements, and 5797 were boys with 7 per cent enlarged thyroids. This represents a mean of 18.9 per cent. The iodin content in the small lakes and rivers throughout Connecticut averages 174 parts per 100 billion.[5] Among Cincinnati school children 40 per cent of the girls and 27 per cent of the boys had some thyroid enlargement. This gave a mean of 33 per cent.[6] The iodin content was not investigated.

In thirteen Minnesota localities 71 per cent of the girls and 41 per cent of the boys had thyroid hypertrophies. The mean value in this case is 58 per cent.[7] The iodin content of water from various points in Minnesota, and especially from the Mississippi River, ranged from 10 to 174 parts per 100 billion.[8]

SURVEY AT LOGAN, UTAH

Figures for the Logan Survey.—Returning to the pupils under consideration in this paper, there were, for both sexes, 863 cases of thyroid enlargement; of which 663 were of slight degree, 186 moderately enlarged, and only 14 markedly enlarged.

A most important and interesting observation was made as regards tremor and tachycardia in relation to these cases of thyroid enlargement. Tachycardia (defined in this report as a rate of 100 or more) was present in seventy-five of the 863 cases; whereas tremor existed in 150 cases. Tachycardia therefore only had one-half the frequency prevalence of tremor, and with the bare exception of one or two instances never existed without tremor also being present. Conversely tremor existed in twice as many cases as did tachycardia and in one-half of its cases existed in the absence of tachycardia.

This study accordingly prompts the conclusion that in practically 100 per cent of cases, tremor as a symptom exists as a forerunner of tachycardia. However, the writer is not unaware of the studies of Hyman and Kessel [9] showing the relationship between thyroid enlargement and a subsequent or even preëxistent "autonomic imbalance," accounting for symptoms simulating thyrotoxicosis in the cases of thyroid enlargement in which no true goiter symptoms actually existed.

This group of 863 Logan pupils having thyroid enlargement represents, then, a mixture of true goiter and those of simple enlargement, with "goiter phobia" (anxiety neurosis) or "autonomic imbalance."

Since it was impracticable to make basal metabolic tests to differentiate these two types, they

are reported in one group, with the above explanation. Whether the pupil is developing true symptoms of toxic goiter or whether it is a case of progressive autonomic imbalance in the sympathetic nervous system, all of the above cases nevertheless bear out the conclusion that in practically 100 per cent of cases, tremor antedates tachycardia as a disturbance in the nervous system mechanism.

The other defects found were as follows: Of the 2506 pupils examined, forty showed a need for refraction; while eight had inflammations of the eyes representing various types of conjunctivitis. There were fifty-one pupils with deaf ears from wax or otitis media; and fourteen had actively chronic discharging ears.

The distribution of wax plugs was as follows: right ear, 104 cases; left ear, 106 cases; both ears, 113 cases; a total of 323 cases. A foreign body existed in the ear of only one pupil, consisting of an oat husk. Nasal obstruction in the form of hypertrophic rhinitis, enlarged turbinates, deviated septum, or a combination of these, was present in 964 pupils; of which in 429 obstruction was on the left side, in 230 on the right side, and 305 on both sides. Diseased gums existed in fourteen out of 1078 pupils who were specially examined for gingivitis and pyorrhea. In all fourteen cases the diseased gums were present about the lower incisors, under crowded teeth conditions.

Tonsils had been removed in 895 of the total number of students; tonsils were apparently normal in ninety-five individuals and diseased in the remaining 1516 students. Tachycardia was present in seventy-five individuals. A murmur was present in eighteen pupils, with definite enlargement in four of the latter. The cardiac hypertrophy was found in pupils with valvular lesions which were dependent on focal infection. Lung pathology, principally phthisical, was found in sixteen students; most of them gave a positive tuberculosis family history.

Only the high school boys were examined for hernias and varicoceles. Out of 290 examined, eleven had inguinal hernias, six of which were right, four were left, and one double. Varicocele was found in forty-eight of the 290 boys, all cases being present upon the left side.

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PSEUDOHYPERTROPHIC MUSCULAR DYSTROPHY

ASSOCIATED WITH AN ACUTE MENINGEAL SYNDROME

REPORT OF A CASE

By MARK GERSTLE, JR., M. D.
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INASMUCH as the etiology of the myopathies is obscure it appears worth while to report a typical case which was associated with an unusual meningeal seizure. In the literature of the past twenty years no references to this combination have been found. However, the association between muscular dystrophy and other conditions has been reported. Daniels [1] reported a case associated with poliomyelitis; Timme believes the disturbance to be associated with pineal dysfunction; Lennon [2] also feels that the fundamental cause is a congenital dyscrasia due to an endocrine imbalance. In his series of cases the symptoms tended to manifest themselves for the first time following acute infections. He observed the occasional improvement which occurs at puberty, and for this reason also feels inclined toward the endocrine theory of causation. He mentions the occurrence of hypoglycemia and the increase of blood creatinin, and feels that the pseudohypertrophic replacement of muscle fibers by other tissues may very probably be due to a deranged carbohydrate metabolism in which glucose is converted to fat rather than to glycogen. He notes that the disease occurs five times more often in males than in females, and also remarks the unusual incidence in the poorer classes.

Davis [3] denies any direct connection between lues and the heredity factor. This observer agrees with the consensus of opinion, namely, that the condition is only transmitted through the female although it is chiefly manifested in the male; in other words sex-linked, as in hemophilia and other diseases. Davis also notes the frequent similarity between the pathology of muscular dystrophy and poliomyelitis.

REPORT OF CASE

J. A., male, seven and a half years of age, entered Mary's Help Hospital January 19, 1925, complaining of headache, fever, vomiting, chills, and stiff neck and back for one week prior to admission.

Family History.—Both parents have a luetic history and have undergone several courses of specific treatment. The mother has had fifteen pregnancies with seven miscarriages. Two children died before their second year, one of whom "was born sick and died of a cold," and the other from "pneumonia." Of the six living children, the oldest, a boy sixteen and a half years of age, has had a positive blood Wassermann. A sister ten and a half years of age exhibits excessive obesity, particularly about the hips, increase of coarse hair on the legs and neck, a puffy myxedematous type of face, and an irritable, negavistic personality. A brother four and a half years of age has a definite hypertrophy of the thigh muscles and, although his gait is not dystrophic in character, shows weakness in getting up from the floor and a tendency to avail himself of objects in the room for support or to "climb up" himself. A sister two and a

half years of age is apparently normal. Another sister one month old has bilateral clubbed feet, snuffles, rhagades, and signs which suggest a spina bifida. No other history of lesions of the muscles or nervous system was discovered although the mother knew a good deal about her immediate family, grandparents, parents, aunts, and uncles, all of whom lived in the same small Italian town.

Past History.—The mother states that she had a normal delivery at the patient's birth, and that the patient was apparently a normal child at birth; he was breast fed, strong and healthy in every way until August 1927. At that time he contracted whooping-cough from which he made an uneventful recovery except for protracted weakness. Following his convalescence he had an acute gastro-intestinal upset from overindulgence in candy. At this time his mother noticed that his gait was wobbling, that he had difficulty in walking downstairs, that he had a tendency to fall backward, and that he had lordosis. When he fell he always had to "climb up" himself or some article of furniture to reach the erect position. All these symptoms had been steadily progressive up to the onset of his present illness. His history otherwise is inconsequential. His mother states that she always thought him to be of average mentality, but inclined to be taciturn.

Examination.—On admission to the hospital the significant points were an acutely ill child lying in bed in the opisthotonic position, on his right side with knees flexed. He was lethargic, semistuporous, and could be aroused only with great difficulty. The Kernig sign was positive on both sides; all the deep reflexes were hyperactive and equal; the pupils and fundi were normal; the lungs, heart, throat, and ears were normal and there were no palpable glands. The abdomen was normal. The rectal temperature was 99.8 Fahrenheit, pulse 104, and respiration 24. A spinal puncture was done at once and clear fluid spurted from the needle. It contained 101 cells, 98 of which were lymphocytes; the Pandy test was positive, and the fluid reduced Fehling's solution. The Wassermann was negative in all dilutions, the colloidal gold curve was 2,333,431,000. There was no web. After standing for twenty-four hours in the ice-box, the culture was negative. The white blood cell count numbered 11,400 with a normal differential count. The urine showed no pathological changes.

Clinical Course.—Following the puncture the patient immediately began to improve, the temperature was normal within twelve hours and the rigidity and headaches disappeared. Two days after admission the spinal fluid which was then obtained showed no departure from normal, the cell count being two. Within four days of admission the patient had apparently completely recovered from the acute attack, and it was at this time that the signs of pseudohypertrophic dystrophy were first studied. These consisted of definite bilateral hypertrophy of the calf muscles and atrophy of the muscles of the thighs and pelvis. The gait was wobbling and unsteady, and the patient climbed up himself in characteristic dystrophic fashion.

COMMENT

The acute onset of symptoms characteristic of meningitis, associated with a pleocytosis and an increase in cerebrospinal fluid protein, caused the presumptive diagnosis of tuberculous meningitis to be made. The speedy and apparently complete recovery renders this condition extremely unlikely. Just how to classify this seizure is difficult. It can hardly be called a meningismus because of the abnormalities in the cerebrospinal fluid. The association of the meningitis attack with the pseudohypertrophic muscular dystrophy seems to us to be apparently unrelated. No similar combination has so far been reported.

In reference to the literature the apparent relationship of our case of dystrophy to lues in the parents and endocrinopathy and other congenital defects in the siblings is of interest.

490 Post Street.
Mary's Help Hospital.

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Noise and Health.—A Chadwick public lecture was delivered in the University Hall, Gordon Square, W. C., on February 21, by Dr. Dan McKenzie, who took as his subject, "Noise and the Public Health." Sir William Collins was in the chair. Doctor McKenzie said that modern civilization was attended by various serious drawbacks, among them being ugliness, which was presented to both the eye and ear. Ugliness to the ear was noise; there were other points of view, not necessarily the same as the physicist's, from which noise may be regarded. Any sound that disturbed repose was noise, which startled and exhausted the human nervous system. The great increase of industrial noises in workshops and factories was acknowledged to have a bad effect on those who worked in them; efforts had been made to reduce the hurtful sounds and the exhaustion they produced. Domestic noise was another affliction of modern life largely produced by street and highway traffic, and little had been done to minimize it. The lecturer proceeded to describe the actual effects of industrial and domestic noises on public health, and discussed the question, "Has the increase of noise any influence in the increase of mental disorders?" He lamented the dying down of government interest in the trouble. Cessation of activity had been attributed to difficulty in concocting a definition of noise. A definition was needed, no doubt, to prevent undue interference with industry. Fifty years ago an English Government had contrived to legislate against unsanitary dwellings without any definition to speak of, the only description being that local authorities were empowered to condemn any premises in "such a state" as to be a nuisance or injurious to health; subsequent juridical rulings had shown that it was only necessary for public health purposes to prove interference with "personal comfort." This was what noise did, after all. The lecturer suggested: (1) That "zones of silence" during hours of silence should be demarcated by police or public health authorities. (2) That the streets in front of schools, colleges, hospitals, and nursing homes should be paved with rubber blocks. (3) That the size, weight, and speed of motor lorries should be reduced. (4) That heavy goods should be relegated entirely to the railways for transit. Doctor McKenzie concluded by reading a letter from a patient in a hospital complaining bitterly of the noises, not outside, but inside the hospital; he added that after inquiry he had found the complaints to be true for all hospitals. They were much too noisy, and recovery of the sick within their wards was interfered with by neglect of a primary rule of treatment. He appealed to all hospital authorities to go into this matter with their nursing staffs. They would be astonished and humiliated by the result of their inquiries. Reform was needed in the matter of subjection of invalids to noise, and reform, like charity, should begin at home. Gramophone records were used to illustrate various types of objectionable mechanical sounds and human cries.—*Brit. M. J.*, 1:415, 1929.

BEDSIDE MEDICINE FOR BEDSIDE DOCTORS

An open forum for brief discussions of the workaday problems of the bedside doctor. Suggestions for subjects for discussion invited.

VERTIGO

Vertigo Caused by Organic Brain Disease

Carl W. Rand, Los Angeles.—Vertigo is a common symptom in brain tumors. It may be seen in any case presenting signs of increased intracranial pressure from tumor, regardless of the location of the growth. It is seldom a predominating symptom, however, except in cerebellar or less frequently in frontal lobe tumors.

Synergia is perhaps the principal function of the cerebellum. Therefore anything which disturbs the function of this organ, especially a tumor, tends to produce loss of motor control, or asynergia. Under these circumstances vertigo is usually present. The vertigo is usually not systematized, as is seen in true labyrinthine disease. Objects seldom whirl before the patient in a definite given direction. His gait is disturbed, and if the tumor is located in one of the cerebellar lobes, he tends to reel toward the side of the lesion. If the vermis is involved he presents trunkal asynergia, being unable to control trunk movements, and when he walks the legs follow the lurching body. Ataxias of various sorts and nystagmus are usually present. In conjunction with these findings are seen the other signs of increased intracranial pressure, namely, choked disk, headaches, nausea, and vomiting.

In frontal lobe tumors, on the other hand, vertigo is often present and is associated with disturbances of gait or station. Much confusion sometimes occurs in trying to differentiate between frontal lobe and cerebellar tumors. A disturbance of the fronto-ponto-cerebellar tract is supposed to exist in such cases. The vertigo in frontal lobe lesions is more likely to manifest itself when the patient is stationary, as in a sitting or standing position. The wide ataxias so often present in cerebellar lesions is less evident. When the patient attempts to sit on the side of the bed he will often pitch backward and forward, being utterly unable to sit erect. In trying to walk he will likewise show more of a halting or pitching gait than is usually seen in cerebellar cases where the gait is more reeling. He will often show changes in character, clownishness, or prankishness. On the other hand he may show signs of mental deterioration, loss of memory, poor insight, or in some cases may become untidy and slovenly. Such mental symptoms are seldom seen in cerebellar cases.

Vertigo is perhaps the commonest and most disabling symptom following severe head injuries. It is generally not systematized and objects do not turn in any definite direction before the patient. It becomes most annoying when the patient first gets up from bed after his injury. It is evanescent, not constant. It is most accentuated by any quick movement such as stooping, turning, moving the head or eyes, and particularly on looking up. It is more like a giddiness or light-headedness than the vertigo seen in cases of brain tumor. It is probably closely associated with disturbances of the equilibratory apparatus of the inner ear, or with some of its intracranial pathways. It persists for a long time, months or years, and in industrial cases is of great importance, as it is disabling enough to prevent many workmen from resuming their former occupation, especially if this entails going up on heights.

* * *

Vertigo—Secondary to Circulatory Disturbances

Ernest S. du Bray, San Francisco.—In this résumé I shall discuss briefly the principal circulatory disorders in which vertigo is a notable symptom. The vertigos of cardiovascular origin form a large and significant clinical group and are related physiologically to a disturbance in the intracranial circulation which produces either an anemia or a hyperemia of the brain capillaries, with resultant secondary effect on the ear mechanism.

Cerebral anemia is primarily dependent on sclerosis of the cerebral vessels, with or without an associated arterial hypertension. The clinical picture of cerebral arteriosclerosis is usually well defined and readily recognized in most instances. Woltman, in a study of 146 patients with this condition, noted that dizziness was complained of in 57 per cent of the cases, whereas in 11.8 per cent it was a prominent complaint. As a matter of fact, dizziness was the most common symptom in the whole arteriosclerotic group and was characterized by its indefinite character, occurring either in transitory mild attacks, or as a constant sensation. Frequently arteriosclerotic patients speak of dizziness when it is reasonable to assume that they mean syncopal attacks or some phenomenon other than vertigo. It is hard to be sure what significance these attacks have. Probably in most instances there is a temporary vascular insufficiency of some portion of the brain. After a series of such attacks, one often finds residual weaknesses of the extremities, increased reflexes on one side, a speech difficulty, or slight mental impairment. In the classic words of Sir Clifford Allbutt, in his splendid little book presenting the summary views of arteriosclerosis, he describes this condition as follows: "When in the

apietic and thrombotic mode of atherosclerosis the cerebral vessels are failing, besides or before these smaller pareses, we note vertigo, somnolence, fretfulness, some loss of memory, some incoherence of mind, some slurring of the feet or a drag of one of them, or like evidence of neurovascular atrophy of the brain." The lesions in these instances are probably small lacunar hemorrhages or areas of softening. Bilateral deafness and bilateral tinnitus are the rule in cases of cerebral arteriosclerosis, and these signs, together with retinal arteriosclerosis, disturbance of the vibratory sensibility in the lower extremities, incontinence of urine, and the patient's general appearance, are common enough to suggest that vertigo is due to cerebral vascular degeneration.

I have dwelt somewhat at length on the vertigo of cerebral arteriosclerosis because of its extreme clinical importance. Closely related is the dizziness which may herald a frank cerebral accident, either of the apoplectic or thrombotic type.

Besides the foregoing causes of vertigo secondary to vascular changes and concomitant anemia, this symptom is not uncommon in many cardiac disorders. It can be readily understood that certain valvular diseases, aortic insufficiency and stenosis, for example, may present dizziness. Perhaps, however, the cardiac condition in which it is most characteristically noted, is the so-called Adams-Stokes disease (acquired permanent bradycardia). In this disorder there is a permanently slow pulse associated with syncopal attacks and vertigo. The vertigo is usually of the mild type and manifests itself as a passing mental confusion, not going so far as loss of consciousness. This may recur several times a day or at long intervals.

A less readily recognized cause of vertigo is seen on rare occasions, with the cardiac arrhythmia of the extrasystolic type. This atypical form of extrasystolic syndrome consists in the appearance of faintness or even syncope, and it may be confused with Adams-Stokes disease. In most patients, at the time of the extrasystole, there is a transient faintness, but usually it is quite mild and goes no farther. In the instances here referred to, however, when the pause in the pulse is a little prolonged, there results an ischemia of the nerve centers, which may give rise to true vertigo, followed by a tendency to syncope. Even loss of consciousness, though rare, is not unknown.

Another cardiac arrhythmia in which vertigo is occasionally noted, is during an attack of paroxysmal tachycardia.

In conclusion, the only other cardiac condition I shall mention with reference to this symptom, is chronic myocarditis. It may be a significant early complaint and, in fact, may direct attention to the heart through its presence. The type of case here referred to has been most ably described recently by Christian, under the title of "Nonvalvular Disease of the Heart." The article appeared in the *Journal of the American Medical Association* of August 29, 1928, and deserves the attention of all medical men, regardless of their chief interest or specialty.

This completes the circulatory causes of cerebral anemia which I shall discuss. Cerebral hyperemia as a cause of dizziness is less well understood, but should be mentioned in connection with the giddiness and flushes of the menopause.

* * *

Neurotic Vertigo

Edward W. Twitchell, San Francisco.—Vertigo in some degree is a complaint made at one time or other by a large proportion of neurotic patients, and herein are included those individuals suffering from traumatic neurosis. It is, in fact, one of the commonest complaints of the traumatic neurotic.

A great many explanations have been made for the dizziness found in these cases. Its frequency in neurasthenia was the chief argument of Teissier for the cerebellar origin of neurasthenia. Krafft-Ebing thought the vertigo in neurotics was due to vasomotor changes. Oppenheim thought that there might be an actual irritation of the end organ, but Lewandowsky regarded it as purely hysterical. The vestibular apparatus is the peripheral organ of vertigo, just as the cochlea is the end organ of hearing, but it must be remembered that in functional disease there may at times also be organic changes in this end organ. Dejerine said that the vertigo of the neuropathic is nothing but the concentration of the attention on a group of sensations of movement or locomotion which soon fills the field of consciousness, and is thus akin to a phobia. The dizziness which comes from standing on heights, being the result of autosuggestion, is, therefore, related to or identical with the vertigo of neurasthenics. Young children, having no fear of heights, are not subject to the vertigo of their elders in similar positions. Vertigo may be produced by hypnotic suggestion.

Functional vertigo may be the slight sensation of dizziness so common with the ordinary neurasthenic, a source of annoyance, but not a very serious one. At the other extreme it may be as severe as in the case of that hysterical patient of Binzwanger who lay helpless in bed for five years attended by nurses night and day to prevent her hurling herself out of bed when the attacks came on. These attacks were likewise accompanied by anxiety, nausea, and vomiting.

Generally the symptom is a relatively minor one, coming on oftentimes with great suddenness, lasting for hours or days or weeks, and terminating often with the capricious suddenness which characterizes all symptoms in the neurasthenic. Oppenheim wrote of a "dauerschwindel" in certain cases with a sudden onset, the dizziness lasting for years. These cases were of neuropathic individuals with psychic abnormalities or of very outspoken neurasthenics.

Some patients will be unable to describe their dizziness more exactly than to say that they have a sense of unsteadiness, others a swimming before the eyes, or a feeling as if they might fall. More rare is the whirling sensation in definite directions

such as one finds in organic disease of the vestibular apparatus.

Recently a patient described to me a whirling in an oblique direction which did not coincide with any of the planes of the semicircular canals.

The dizziness is rarely sufficient to make the patient stagger severely, and falls are extremely rare. When lying down the dizziness is least, worse when standing, and always aggravated by excitement.

Kron knew of one patient, a rope dancer, whose dizziness persisted except when he was on the rope.

The diagnosis of functional vertigo must be made only after careful and repeated examinations have satisfied the examiner that organic disease is not present. A patient with functional vertigo does not give the same response to tests of the end organ which one sees in organic disease, but it must be remembered that patients with functional vertigo sometimes have a coincidental organic trouble and here it becomes difficult, if not impossible, to separate the functional from the organic element. Lewandowsky speaks of a case in which "I was able to make a diagnosis of hysterical vertigo, subsequently confirmed (the diagnosis by others having been given as cerebellar abscess), because the patient insisted that he was always drawn to the same side in his spells." There is no specific treatment for functional vertigo. It must be regarded as part of the neurosis and treated along with the other symptoms in the disease.

* * *

Aural Vertigo

Simon Jesberg, Los Angeles.—Aural vertigo is a type of dizziness that is due to abnormal stimulation of the end organ of equilibrium in the labyrinths. This type of vertigo is always accompanied by nystagmus of a certain type and a sensation of turning.

Experimentally aural vertigo, with its accompanying nystagmus, may be produced in three ways: (1) by turning, (2) by caloric, and (3) by electrical stimulation. The direction of the vertigo and the nystagmus can be determined according to that part of the labyrinth stimulated. The labyrinth on one side is in opposition to that on the other side, thus when one labyrinth ceases to function, the normal side overacts, resulting in vertigo and nystagmus, which is due to lack of balance of the remaining side. Pathological conditions such as inflammation and suppuration of the middle ear may extend to the internal ear; if this causes stimulation due to inflammation, nystagmus and vertigo result. The nystagmus in this instance will have its quick component toward the diseased side. Hearing is still present. Destruction of the labyrinth results in complete deafness, and in this condition the vertigo and nystagmus are due to overaction of the healthy side and the direction of the quick component is reversed, that is, away from the diseased side.

Systemic disease such as syphilis, leukemia, and toxemia, sometimes affect the internal ear. So-called Meniere's disease is due to a spontaneous hemorrhage into the labyrinth. As first described by Meniere in 1848, it presents certain symptoms: (1) deafness, (2) vertigo, (3) tinnitus, and (4) nausea. These symptoms are present in destruction of the labyrinth from any cause. Compensation of function after destruction of one labyrinth occurs gradually after several months, so that there is no longer present vertigo and nystagmus due to overacting of the healthy unopposed side.

If, then, vertigo of aural origin is present, nystagmus will also be present. The ear should be examined for middle ear inflammation or other local disease. Hearing tests indicate whether the cochlear part is also involved.

Toxemia from a focus of infection occasionally causes a mild vertigo, probably due to irritation of the internal ear. This is apt to be intermittent and transient. In this condition, as well as other systemic diseases, such as lues and leukemia, inspection of the ear will show no inflammation.

The Record of Sixteen Years.—Since May 22, 1913, the Foundation has paid out from income and principal a total of $144,189,400. The emphasis has been on the training of doctors, health officers, and nurses, the creation or strengthening of institutions of medical or public health education, the building up of official health organizations, the promotion of field research, the demonstration of new methods. The World War called for exceptional aid to medical services, social work in army camps, and emergency relief, notably for children. For these purposes $22,000,000 was appropriated.

Temporary antihookworm campaigns in the United States and in many other countries have been broadened into permanent official rural health organizations. Malaria has been studied more fully and methods of control worked out at home and abroad. Yellow fever has been forced to retreat from Mexico and Central America and from Northern South America, until it is now found only in Brazil and West Africa. A wartime antituberculosis organization built up with Foundation aid in France has been wholly taken over by the French and is being incorporated into a general public health service.

Various schools and institutes of public health have been created or extended with Foundation funds. For the strengthening of influential medical schools in many parts of the world from London to Singapore, the Foundation has expended about $29,000,000. This does not include building, equipment, and support of the Peking Union Medical College and aid to hospitals and the premedical sciences in China.

Up to December 31, 1928, fellowships had been granted to 3187 representatives of fifty-eight countries at a total cost of $4,908,743. The international significance of these fellowships may be inferred from the fact that 1383 of the total fellows pursued their studies in countries other than their own.—*Information Service of the Rockefeller Foundation.*

Hunters Given Tularemia Circular with License.—An enterprising health officer in the southern part of the state believes in centering his efforts where they will do the most good. He prepared a mimeographed tularemia circular, but instead of distributing it broadcast, gave copies to the license clerk with the request that one be given with each hunter's license issued. We venture the opinion that if any hunter in that district becomes infected with tularemia it will be through sheer carelessness and not through lack of knowledge of how the disease is conveyed.—*Health News.*

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Leaflet Regarding Rules of Publication.—California and Western Medicine has prepared a leaflet explaining its rules regarding publication. This leaflet gives suggestions on the preparation of manuscripts and of illustrations. It is suggested that contributors to this journal write to its office requesting a copy of this leaflet.

EDITORIALS

REFERENDUM BALLOTS ON INCORPORATION OF THE CALIFORNIA MEDICAL ASSOCIATION

Explanation of Ballots Which Will Be Mailed to You.—Within a few days after the receipt of the July number of CALIFORNIA AND WESTERN MEDICINE, every member of the California Medical Association will receive a ballot with stamped reply envelope addressed to the California Medical Association. Also some explanatory leaflets telling of the action of the House of Delegates at the last annual session at San Diego, wherein it was ordered that a referendum ballot should be taken on the proposed incorporation of the California Medical Association.

The minutes of the May 8, 1929 meeting of the House of Delegates, which were printed in the June issue of CALIFORNIA AND WESTERN MEDICINE, on page 437, gave a synopsis of the proceedings of the House in relation to the proposed referendum and to the new Constitution and By-Laws which were adopted at that time.

The proposed California Medical Association corporation is to be a nonprofit corporation without capital stock. The form of corporation is one which is permitted under the California statutes and has been used by the San Francisco County Medical Association as a means of best caring for its properties and funds. The incorporation plan has been most carefully studied by the Council during the last three years, and not only has its endorsement, but at San Diego also received that of the House of Delegates.

* * *

Next Step in the Procedure for Incorporation. What is now wanted and what is needed, in order to best comply with the corporation laws of California, is the endorsement of the members at large.

The minutes and literature to which reference here has been made, and which will be enclosed with the ballot, will explain the details. In this column we can only add that it is our sincere belief that this form of incorporation will amply safeguard, in fullest degree, all the properties and funds of the California Medical Association for all time to come—insofar as carefully constructed laws can so safeguard—and that through such incorporation, the California Medical Association will be in position to develop into a stronger and in every way a better state medical association than would be possible without such incorporation.

* * *

How to Vote If in Favor of Incorporation.—If you are in favor of incorporation, take your ballot and cross out the words "(b) *I disapprove and do not consent to*"—

Then sign your name and address, and mail promptly to the central office of the Association in the stamped reply envelope which will be enclosed with the ballot.

* * *

Important That Every Member Should Vote.—Please remember that there are certain legal technicalities in all this, and that it is important that every member should vote and mail his or her ballot *promptly*. Do this at once and the duty and obligation will be behind instead of in front of you. Also you will have the satisfaction of knowing that you have done your part in laying a broader foundation for future growth of the California Medical Association.

THE BACTERIOPHAGE—VIEWPOINTS OF SCHULTZ OF STANFORD

A Previous Paper on the Bacteriophage.—The October 1927 issue of CALIFORNIA AND WESTERN MEDICINE presented a discussion of "The Bacteriophage—Its Prophylactic and Therapeutic Value—A Review." The opening sentence of E. W. Schultz of Stanford, author of the article, stated: "The discovery of bacteriophage by d'Herelle (of the Pasteur Institute of Paris) in 1916 marks the beginning of one of the most important epochs of bacteriology, not only because of its theoretical, but probable practical bearing." . . . "D'Herelle concluded that the phenomenon must be due to an invisible parasite of the bacteria, and he accordingly gave it the name 'bacteriophage.'"

In his conclusions our Stanford colleague stated: "A review of the literature indicates that the bacteriophage may exercise either a prophy-

lactic or a therapeutic value in certain infectious diseases. . . . Further studies to explain the irregularity of the results are clearly indicated."

The above excerpts of a few pertinent sentences in the presentation made by Schultz call attention to his belief that d'Herelle's discoveries were important. He emphasized also the need of caution before plunging into acceptance of the new agent as a therapeutic measure of great value.

That these words of caution were well spoken is proved by the recent exploitation of bacteriophage products by some of the pharmaceutical houses.

* * *

Importance of the Article on the Bacteriophage: Its Request for Coöperation.—The current issue of CALIFORNIA AND WESTERN MEDICINE prints a paper read by Doctor Schultz at the recent San Diego annual session in which he reëmphasizes some of the cautions which he had previously laid down.

The current article, as well as the paper which appeared in the October 1927 issue, are worthy of careful perusal and thought.

These paragraphs which are here printed would call the special attention of the readers of this journal to the footnote of the article in this issue, page 8, in which Doctor Schultz and his coworkers at Stanford invite the readers of this journal who are interested in this subject to pool their efforts, using the Stanford laboratories as a sort of clearing house, in order that more accurate knowledge may be gathered and opinions formed of the real value of what may be an important therapeutic aid in the future. It is an interesting field of investigation and under conservative guidance, should be of value not only to those who accept Doctor Schultz's invitation to coöperate, but to the members of the state medical associations of which this journal is the accredited representative. It is hoped many members of the California, Nevada, and Utah Medical Associations will avail themselves of the opportunity which the invitation of Doctor Schultz makes possible. Future contributions on the subject will be awaited with interest.

"FORD ATTACKS MEDICO ETHICS"

A Recent Newspaper Contribution by Henry Ford.—The caption to these paragraphs is taken from a leading article in a recent Sunday edition of the *Los Angeles Times.* The article in question was one of a series of interviews of Mr. Ford, and was presented under the sponsorship of one of the large newspaper syndicates of the United States.

The auspices under which the interviews were given, and their publication on succeeding Sundays, all indicate that they were duly authorized by the great automobile prince of America, Henry Ford of Detroit. It would seem fair to assume, also, that Mr. Ford spoke deliberately on the different topics selected by him.

The article was no doubt widely read, and its half-truths were probably as thoroughly absorbed and believed by thousands of lay readers, as they were by Mr. Ford himself when he gave the interview. For it is impossible to make oneself think that Mr. Ford would willingly make untruthful statements. What he said may, therefore, be taken as an expression of his beliefs.

Because of his remarkable achievements in the automotive industry and his originality and initiative in building up one of our country's greatest economic achievements, and because of his interesting personality, and also because of the wide publicity and acceptance with which his opinions are received by many of his fellow citizens, his criticisms of the medical profession may well be given passing consideration by the members of that profession.

* * *

Two Major Impressions from Mr. Ford's Viewpoint.—Two impressions stand out after the interview has been read. One, that Mr. Ford evidently has only a superficial knowledge of the training standards and methods of practice of modern-day practitioners of nonsectarian medicine. Two, that the nonapplicability or irrelevancy of Mr. Ford's remarks and criticisms rest largely upon his somewhat basic assumption of thought which crops out throughout his supposed analysis, namely, that the stresses and strains to which the human animal body can be put, are as firmly fixed and as easily determined as are those of an automobile, a bridge or other inanimate object; and that the exploitation of the conservation, care and repair of that human body should follow the same advertising principles and methods which are in vogue with producers of such inanimate things as automobiles and other manufactured products.

Of course there is nothing new in such fallacies of reasoning. Medical men learn early that Mr. Ford's general viewpoint concerning medical practice is almost universal in modern-day America. So much is this the case that practitioners of medicine must keep themselves constantly on guard to prevent themselves from falling into the same and similar errors of reasoning. It is at all times a great temptation to overevaluate the success or failure of this, that or the other method of treatment which may rest upon a too limited number of cases or experiences.

For with each human being, the physician's relationship is not with inanimate factors like brick, wood, steel, or mortar, the tensile strength and endurance of each type of which can be calculated to a mathematical nicety, and the types of some of which, according to their formulae, can be produced forever with the same qualitative properties. Instead, in the human animal, physicians are called upon to deal with a living or biologic entity, composed, it is true, of certain major organs and tissues. But each of these in turn is composed of constituent or cell units, so bound up in the strength and weaknesses inherited from ancestors, and so responsive to previous diseases and habits associated with each individual's environment, that microscopes, electrocardiographs, x-ray machines and other means of accessory investigation, estimation and measure-

ment, as well as all the knowledge and skill which a well educated and well trained physician can acquire, only too often make such a physician realize how limited is human wisdom in its application to the scientific care of a fellow human suffering from any one of a large number of diseases to which that individual is subject.

* * *

Physicians Recognize the Limitations of Medical Science and Art.—Practitioners of nonsectarian medicine recognize the limitations of the science of medicine. In the past and in the present, and also in the future—unless the mediocrity of endeavor which is associated with state medicine should come into play—these nonsectarian practitioners have organized and strenuously fought for educational and training standards that would give lay citizens a fair assurance of intelligent supervision and care when they called in a doctor. Nevertheless these same lay persons as a rule have given very little support to the nonsectarian profession in preventing the passage of laws which give legal sanction to sectarian or cultist practitioners who graduate from schools demanding little more than reading, writing, and arithmetic as a preliminary education instead of courses of collegiate grade; and which schools give professional training of high sounding type as printed in catalogues, but which are little more than a gesture when considered from the standpoint of really scientific professional training.

* * *

All Doctors Are Alike to Many Lay Persons.—Many of the laity seemingly make no effort to find out about qualifications when a physician is engaged. To many such lay persons all doctors are alike and presumably of equal training and ability. In view of some of his comments, Mr. Ford, in discussing medical ethics, also seemingly classes all doctors, be they nonsectarian or cultist, as of the same general mold and character. The cultist practitioners, by the way, advertise their methods and remedies just as Mr. Ford advises ethical physicians to do. The sins and deficiencies of these insufficiently trained individuals are then unloaded on the ethical group of nonsectarian practitioners, who acknowledge the limitations not only of the art and science to which they have pledged themselves, but also recognize their own personal limitations as well.

The foregoing remarks are laid down because they may serve as a basis for better approach to some of the comments made by Mr. Ford in his interview.

* * *

Do Professional Ethics Interfere with Legitimate Publicity?—When Mr. Ford states, "But when professional ethics are used to prevent the people from getting proved and tested information, 'professional ethics' do not look so good," he is setting up a straw man which he feels sure he can prove to all the world he can easily knock down.

In connection with the foregoing quotation it may be remarked that it is hoped that he will use some of his wealth to mass the evidence to show that nonsectarian physicians have "prevented the people from getting proved and tested information" on medical matters.

Members of the medical profession who have special facilities for knowledge on this point know of no such attempts to withhold proved and tested information. A physician who discovers anything of value to the human race and who does not give his fellows an opportunity to prove or disprove its worth does not very long remain in good caste in the ethical and nonsectarian medical profession.

* * *

Mr. Ford a Therapeutic Optimist.—In his next paragraph Mr. Ford gives evidence of being a real therapeutic optimist, as witness: "Nearly every day sees some method of surgery or medical treatment which is an improvement on the old."

However, his optimism rapidly gives way to pessimism, for he soon states: "A good many physicians are so busy using their old, accustomed methods of treatment that they haven't time to become informed about new and better methods."

Mr. Ford evidently forgets that an analogous criticism was leveled at him for a number of years, and with far more justice and logic, because he refused to alter to any degree the general shape and construction of the automobile which he had honored with his name. Perhaps some of the physicians who are not swept off their feet by the announcement of every new method of treatment of human ills show the same constructive conservatism which he himself displayed when he held on tightly to something that he felt was very good, in spite of the clamor of exploiters of new and supposedly better automobiles, many of which have already gone into oblivion, just as have many of the supposedly new and better methods of treatment of human ills which were exploited during the same time period.

* * *

Are Physicians Slow in Exploiting New Methods?—Mr. Ford feels that "it is one of the first duties of the profession to see that every step of progress in medical science is given to the public, promptly and fully, and in terms the average man can understand."

But he surely will wish physicians to retain the right to try out and really prove the worth of new remedies before indulging in exploitation of the same. The danger in medicine is not that physicians do not avail themselves of new discoveries. Every intelligent doctor knows his place in a community depends upon his successful work and he is quick to grasp at methods which make for better results. In the matter of doctors who are not intelligent in that manner, the profession must depend upon the laity to help support laws that will increase the standards of professional training and which thus will give an increasing guarantee of better trained doctors. Unfortunately the laity as a rule not only does not give such support, but permits itself to be misled into sup-

port and protection of lower standards of education and training.

Apropos of Mr. Ford's statement about publicity, as just quoted, would it not be proper to suggest that he, as one of the richest men in the world, might here find an admirable place for investment of a few spare millions. A foundation sponsored by him, and dedicated to the dissemination of knowledge that would make for the conservation of human health and life, and the agencies of which foundation could be used to protect all classes of citizens from incompetent practitioners wherever found (although, of course, the lesser the general education, and the poorer the professional training in a group, the larger will be the number of incompetents there to be found), could certainly be of value to the world.

* * *

Do the Same Rules Apply to Manufacturing and Medical Publicity?—Here is another gem from Mr. Ford's interview: "What would happen if the producers of the world's goods assumed the same attitude toward the public (as does the medical profession?" 'Let the public find out what we (the doctors) have to offer, if the public can.'"

As a matter of fact, nonsectarian physicians are very anxious that lay citizens should know what is offered by practitioners of nonsectarian medicine, namely, that they are a group of well-trained men and women physicians, accepting medical facts just as other scientific facts are accepted; using methods that have been proven safe and efficacious, each member of the guild with absolute right and freedom to use any and all measures which appeal to him, but having the support of his fellows only when truthfully and logically carried out; and giving freely to the profession all discoveries redounding to the benefit of the people of the world, without hope or expectation of personal or economic reward other than the honor which comes through the appreciation of colleagues who recognize the beneficent nature of such contributions.

Because physicians live up to such a code, as a class they do little more than make decent livings for themselves and their families. Through all these years nonsectarian physicians have been the only group in professional or business life who have so consistently lived up to such altruistic principles. Had Mr. Ford applied the same code to his own discoveries, it would not have been possible for him to amass the millions which came to him, because his monopoly of a splendid plan would not have been a monopoly had every other automobile manufacturer been free to use his discoveries.

* * *

How One Great Group of Discoverers were Rewarded.—Mr. Ford, in his interview, speaks kindly of the altruistic spirit in which medical men give to their colleagues, without hope of money recompense, the knowledge and discoveries concerning human diseases. He must acknowledge that this is a most unusual characteristic for any profession or business to have. He can do a big service along this line by calling attention to the almost beggarly governmental pensions given, for instance, to the widows of the Army physicians who showed how yellow fever was spread and who thus made it possible for our own country annually to save millions of dollars in money and hundreds and thousands of human lives.

And only the other day, newspaper dispatches made mention of the United States Public Health Surgeon-General's recommendation that the widow of Doctor Joseph Goldberger, who had given important knowledge to the world concerning pellagra (his wife at the time submitting herself to experiment), be granted a pension of $150 a month. It took much effort to secure pensions for the widows of the yellow fever investigators. Will it take more than one session of Congress to secure this pension for Mrs. Goldberger? Will Mr. Ford have one of his representatives investigate this case and, if proven worthy, use some of his powerful influence to have Mrs. Goldberger receive an expression of decent human appreciation?

* * *

Would It Be Better for Physicians to "Patent" Their Discoveries?—Mr. Ford ends his interview by stating, "There are no secrets from the public or from competitors in the industrial and business world except those secrets which are protected by patents and represent the life of a concern. The same company that holds the patents, however, makes no secret of the product, where to get it, how much it will cost, what it will do, etc. . . . In what respect do doctors stand in a different relation to the public? I see none whatever."

Answering these closing sentences of Mr. Ford, it may be said that, if ethical physicians took out patents on their discoveries, just as did Mr. Ford on his, the world would probably show a greater respect for both medical discoverers and medical discoveries. The ordinary layman is so accustomed to being made to pay well for anything that is good that he is somewhat skeptical of anything that is offered free. So much is this the case, that many of such lay persons, when suffering from real or imaginary ills, turn not to physicians, whom they know have had good training and who are of good reputation, but to the cultist, faddist, or other presumable practitioners of the healing art, who conduct their professional activities on a money basis throughout, and who avail themselves of all direct and indirect publicity and advertising agencies that will make for larger groups of paying clients; and which publicity and advertising agencies Mr. Ford presumably holds ethical physicians should also use.

From what has been here quoted and commented upon, it is to be noted that we are somewhat of the opinion that, while Mr. Ford evidently had the very best intentions in giving his interview, he really was talking and giving somewhat dogmatic advice in matters of which, because of his busy life as a manufacturer and executive, he really had little more than a sparse and super-

ficial knowledge; and that in laying the foundation for his criticisms he led himself into error in his reasoning by having in mind as an analogy to the viable human body a nonliving automobile. So that starting out with insufficient knowledge and illogical analogies, it is not to be wondered at that he gave expression to viewpoints which nonsectarian physicians are not likely to accept.

* * *

Suggestion that Mr. Ford Establish a Medical Publicity Foundation.—However, all this can be overlooked if he will but establish a foundation that will be devoted to legitimate and broad publicity concerning human ailments, so that human health and life in our own country and throughout the world may be the better conserved. If he will do something of this sort, members of the ethical and nonsectarian medical profession will be gratified, because they know that with better knowledge of their problems and efforts will come increasing support of their attempts to constantly maintain and improve the standards of professional training and practice, and to bring into being a greater capacity for service to their lay fellow citizens.

No Danger of Sensitization.—Toxin-antitoxin has been, until the present time, made by adding a tiny amount of horse antitoxin to the toxin for the purpose of making it more suitable to be used as the immunizing agent. Some four years ago Doctor Hooker of Boston reported when persons who received 1/100 of a cubic centimeter of horse serum to test whether they were sensitized or not, and then the series of three doses of toxin-antitoxin, that a year later these persons showed a greater proportion of skin reactions when given another intradermal test of horse serum. It is to be noted that these persons had received one hundred times as much serum, through the intradermal test, as from the toxin-antitoxin.

This report caused a considerable number of physicians to worry over whether they were sensitizing children by the toxin-antitoxin injections to later therapeutic doses of anti-serum, these naturally being all from the horse.

We have not been able to prove that toxin-antitoxin does appreciably sensitize to horse serum, but as goat antitoxin is just as efficient as horse antitoxin and does not sensitize animals to horse serum, we decided to substitute goat antitoxin for horse antitoxin in the toxin-antitoxin mixture. This has been done for the past two months.

Most of the commercial biological laboratories have also changed to goat antitoxin in the preparation of their toxin-antitoxin for diphtheria.—***New York Department of Health Weekly Bulletin,*** May 1929.

The Work in 1928.—During 1928 the Rockefeller Foundation continued its regular program of activities consisting chiefly in (1) promoting the development of medical knowledge by aiding schools of medicine, nursing, and hygiene in many parts of the world; (2) advancing the cause of public health by helping governments fight certain diseases and strengthen their local health services; and (3) carrying out an extensive fellowship program by which eight hundred men and women were enabled to pursue additional studies, chiefly in countries other than their own. In doing this work the Foundation disbursed from income and capital $21,690,738, of which $12,000,000 constituted an endowment fund for the new China Medical Board, Incorporated.—***Information Service of the Rockefeller Foundation.***

Making a State Journal.—The following account of the work required to get out the ***Journal of the Michigan State Medical Society*** is taken from the April issue.

"All too frequently the journal is received and read with no thought in regard to the details requisite to publish it. Our efficient editor has well enunciated the editorial policy. The member is uninformed as to the amount of time given by the editor in editing the original manuscripts, reading galley proof, then page proofs, writing editorials, classifying original articles, reviewing other journals and books, remaining abreast of progress so as to promptly transmit to the members dependable facts and so prepare for you each month a journal that is of intense value to every member as well as a credit to our society. There is a vast amount of time and labor expended in editorial direction.

"In addition to the editorial supervision there is a business side that must be conducted and directed ere each month's issue can be sent to a member. In 1928 the total cost of the journal was $15,103.24. From your annual dues $2.50 per year is credited to the journal fund. A total of $8,458.36 was thus received, leaving a balance of $6,644.88 to be acquired to defray all publication costs. This balance is acquired through advertising sales. Advertising space is not sold without effort. Constant contact with advertisers must be maintained and arguments advanced to secure renewal of expiring contracts. Then follows service to the advertiser which consists of securing copy each month, sending it to the printer, obtaining proof, sending the proof to the advertiser and upon its return to cause the printer to make the corrections. In addition, inasmuch as the journal accepts no advertising that is unreliable or not in conformity with the rules of the American Medical Association Council on Pharmacy and Chemistry, all such copy must be carefully read and the Council's published reports examined to ascertain if the drug or preparation has been approved. We are not then through with our advertising affairs; monthly 'dummy pages' and copy instructions must be prepared for the printer so that he can make up the advertising forms allocating each ad to its specified place for which the advertiser pays. Then, when the month's issue is mailed, entries of sales are made on our ledger, bills made out and remittances credited. To cite these details is easy, to execute them consumes much time and labor. Our advertising income in 1928 was $8,474.13. Were it not for this income the present journal could not be sent to our members without an increase in dues of $2.50 per member."—***The New York State Journal of Medicine,*** May 1929.

Yellow Fever Research Continues.—In a well-appointed special station at Lagos, Nigeria, in a British institute at Accra on the Gold Coast, in a laboratory in Bahia, Brazil, and in quarters provided by the Rockefeller Institute for Medical Research in New York, investigators under the auspices of the Foundation have continued studies of the nature of yellow fever, methods of detecting its presence, the kinds of mosquitoes by which it is transmitted, the breeding habits of these insects, and the possibilities of protecting nonimmunes against infection. The question as to whether the African and American yellow fevers are two different diseases or one and the same has been kept constantly in mind.

Some of the preliminary results were published in technical journals during 1928. Other papers will follow. While no specific causative agent for the disease has been found, knowledge about the virus has made some progress. The identity of African yellow fever with the American type is now almost completely established. Experiments with mosquitoes have proved that, in Africa at least, the ***Aedes aegypti*** is not the only means of transmission. Some of its close cousins are able to carry the infection. There is even reason to think that an entirely different kind of mosquito may also be found guilty. Certain tests seem to indicate that virus in blood may find its way through even the unbroken skin of a monkey or possibly of a man and thus directly cause infection.—***Information Service of the Rockefeller Foundation.***

MEDICINE TODAY

Current comment on medical progress, discussion of selected topics from recent books or periodic literature, by contributing members.

Dermatology

Trauma as Localizer of Systemic Dermatoses.—The above caption may sound technical, but it bears directly on a very important and common clinical problem.

Trauma has always been recognized as an important etiologic factor in producing local lesions. For instance, the stimulating effect of local traumatization on the causation of benign and malignant growths is a well-known fact.

Also the facility of production and inoculation of local infection through superficial traumatization of the skin, such as scratches and abrasion, is one of the oldest empirical observations now integrated into bacteriologic inoculation technique.

That the local infection so engrafted may become systemic and generalized is well known, but what seems to be not sufficiently known to the general profession is the fact that the pathogenic *modus operandi* may proceed in the reverse order and that the latent systemic infection or toxemia may break out on the surface in the regions submitted to local traumatization.

This clinical phenomenon not uncommonly gives rise to diagnostic errors because of the prevailing tendency to overemphasize the diagnostic significance of clinical history at the expense of diagnostic possibilities suggested by the objective examination of skin lesions.

In these cases the history of preceding trauma stands out so prominently, and the localization of the lesions limited to the traumatized regions easily misleads the unaware practitioner in a diagnosis of dermatosis of local traumatic origin, particularly so if the laboratory report happens to be negative.

A case strikingly illustrating the point under discussion has been recently observed by the writer.

A woman, fifty-three years of age, was referred for diagnosis of a peculiar, disfiguring skin eruption of strictly symmetrical distribution involving the circumoral region and both nasolabial spaces. The patient gave a history of four successive operations in a year's time, necessitating several hours of anesthetics. The striking feature of the case was that the eruption was strictly limited to the parts covered by the anesthetic cone. To complicate matters, the eruption, according to the patient's statement, developed shortly after the last administration of the anesthetic.

A seemingly plausible diagnosis of a dermatitis due to an external irritation was made by the attending surgeon. After the eruption failed to clear up in seven weeks under local bland applications, the patient was referred for diagnosis.

In spite of the traumatic history and localization, the morphologic study of the skin lesions detected features suggestive of an infectious granuloma, such as dusky red color, soft smooth surface, serpiginous border, multiple discrete nodules, etc.

Latent syphilis was suspected, and in spite of the negative Wassermann test the patient was put on the specific treatment of intramuscular mercurial injections and potassium iodid. In four weeks' time the eruption cleared up beyond recognition.

The clinical lesson of the case is: The latent syphilitic infection was not sufficiently virulent to break through the threshold of latency, and it required a stimulus of local traumatization and irritation to precipitate the breaking out on the surface of the localized cutaneous syphilid.

A brilliant experimental demonstration of the above enunciated clinical principle was recently published by Fried and Segal[1] of Moscow, Russia, who have produced the following experiments: In rabbits, an area of skin from ten to fifteen centimeters in diameter was shaved or clipped and subsequently scarified with sand paper. From 2 to 5 cubic centimeters of an emulsion of trichophyton gypseum was then injected intravenously into the animals. Of the twenty-nine animals used in the experiments, eleven, or 38 per cent, developed cutaneous lesions confined to the shaved and scarified areas only.

The confinement of the lesions to the skin in these experiments, in their opinion, is due to the trauma of the wall of the papillary capillaries, which permits the parasite to migrate into the skin, where it manifests its pathogenic properties.

The clinical principle enunciated above is of great practical importance in industrial medicine. Not uncommonly a patient with a skin eruption, localized on the parts exposed to occupational irritants, is refused a claim for compensation, and dermatosis is declared non-occupational because it proved to be of systemic origin.

Keeping in mind the potentiality of trauma as localizer of systemic dermatoses would contribute much toward a correct interpretation and just solution of these cases.

These cases should be considered compensational because the occupational irritant serves as an actual and, at times, the sole factor in breaking down the systemic resistance, causing the latent systemic condition to break through the threshold of latency and localizing it on the parts exposed to occupational irritants.

MOSES SCHOLTZ, Los Angeles.

REFERENCE

1. Fried and Segal: Arch. Dermat. and Syph., January 1929.

Bacteriology

Functional Diagnosis of the Reticulo-Endothelium.—In addition to the highly specialized endocrines of current nomenclature, several biochemists have postulated less specialized tissues of internal secretion widely distributed throughout the body in the form of the reticulo-endothelial system. Immunologists in particular have been interested in this hypothetical somatic endocrine as the possible source of specific antibodies. That this system may in time become of diagnostic importance is indicated by the reticulo-endothelial functional test recently proposed by Wilensky of Lenin Institute for Medical Research, Kasan, Russia.[1]

The colloidal dye, Congo red, injected intravenously into rabbits, is rapidly removed from the blood by a process that we may refer to, figuratively, as colloidal phagocytosis by the capillary endothelium and related cells. At the end of an hour less than 20 per cent of the injected dye is demonstrable colorimetrically in the circulation. In rabbits whose reticulo-endothelial functions have been reduced or inhibited by intravenously injected diphtheria toxin or living staphylococci 45 per cent of the injected colloid may be demonstrable at the end of an hour.

Applying this test clinically, Wilensky reports that one hour after intravenous injection of his routine test dose (10 cubic centimeters 1 per cent Congo red), 30 per cent of the dye is present in the normal circulation of man, 50 per cent in patients with mild bacterial infections, and as high as 80 to 100 per cent in patients suffering from severe infections. There is a suggestion in his data that the percentage of retained colloid is an approximate measure of severity and prognosis.

Whether or not the test is harmful or beneficial to the patient, Wilensky does not say. There seems no reason, however, why a test of this type should not be developed along both diagnostic and therapeutic lines.

W. H. MANWARING, Stanford University.

REFERENCE

1. Wilensky, L. J.: Fur Lehre der Functionellen Diagnostik des Reticulo-Endotheleoparates, Ztschr. f. d. ges. Exper. Med., 1927, Vol. liv, 257.

Orthopedics

Claw-Toes.—The term "hammer-toe" is properly applied to toes so deformed which are traceable from childhood, and are, most likely, inherited because they can invariably be traced in the family tree. The hammer-toes may thus be regarded as a primary congenital deformity, and not be attributed to faulty shoe-wearing, since it can be diagnosed long before the foot has even been shod. Toe deformities which simulate hammer-toes, but are produced by other causes such as hereditary and intra-uterine defects, are better termed "claw-toes."

There is, primarily, a weakness or a paralysis of the interossei muscles of the lesser toes, and a similar muscle defect of the abductor and adductor hallucis and both short flexors of the big toe. This inefficiency may be a local manifestation of a remote pathologic lesion, as in poliomyelitis, progressive muscular distrophy, spina bifida, or it may result from local harmful influences, such as short shoes and socks, which force the toes into extension, ultimately producing a contracture of the extensors and a weakness and overstretching of the flexors of the toes. Claw-toes may be a sequence of metatarsal arch depression, and be associated with hallux valgus and minimus digitus varus; in these cases the flattening of the metatarsal arch compresses the interossei muscles, thus disturbing their function, weakening and inactivating them. The interossei muscles, being weak from any of the many causes, lose their flexor action upon the basal phalanges, thus lending to the extensors of the toes more than usual power to act upon the basal phalanges; they become overextended and dorsally displaced, eventually even subluxated.

In course of time the extensor muscles shorten and contract permanently, while the long toe flexors become stretched by this hyperextension; they pull the first and second phalanges into flexion. Thus, the claw-toes are completed. The symptomatology of this defect is too well known to need rehearsing. Be it only added that the patients are so miserable that they are willing to sacrifice the toes if they receive the assurance that they will be freed from the unbearable pain.

Conservative attempts at treatment should always precede any operative measures, and only if the former fail should the latter be recommended. The conservative methods aim to guard against pressure upon the prominent phalangeal heads. There are many ways to secure relief. One way, advocated by Hohman, is not so popular as the others. He attempts to pull the basal phalanges plantarily. He places on the dorsum a piece of felt. This pad is held by adhesive strapping, which pulls the phalanges downward. There are many ingenious conservative methods to relieve pain; but to restore normal relations, to effect a cure, surgical procedures must be resorted to.

Among the operations which should be discarded in these deformities are: (1) amputation of a toe or toes, since worse crippling will be the outcome; (2) forcible manipulation, and cutting the soft tissue on the plantar surface, because these procedures will only give a temporary result. The best operative measure is on the extensors, without or with resection of bone.

If no bone is to be resected the extensor attachments on the basal phalanges are loosened, and the fibrous bands from the tendons are completely detached. After this loosening and detachment of the tendons they are elongated. The contracted capsules should be loosened only on the dorsal side, the plantar surface of the contracted capsule should not be touched. The dislocated phalanges can be easily reduced by traction and kept in position by splinting. I have seen no recurrence in my operated cases.

A. GOTTLIEB, Los Angeles.

STATE MEDICAL ASSOCIATIONS

CALIFORNIA MEDICAL ASSOCIATION

MORTON R. GIBBONS.....President
LYLE C. KINNEY.....President-Elect
EMMA W. POPE.....Secretary

OFFICIAL NOTICE

Prize Papers.—During 1928 six papers were submitted in the Clinical and Research Prize Contest; in 1929 there were none. There seemed no valid reason for the drop in interest, unless it were that insufficient publicity had been given to the contest.

The Council at the meeting at Coronado, after hearing the report of the Prize Committee, authorized the continuance of the contest and suggested that more extended publicity be given these prize awards through the journal, the county societies, section officers, and medical schools, and that the committee be continued.

The rules governing the competition can be obtained from this office by any member interested. Those who wish to deliver papers at the 1930 session may enter said paper in the prize competition.

HOW PAPERS ENTERED IN PRIZE COMPETITION MAY ALSO BE READ AT ANNUAL SESSION

All papers entered in the Clinical or Research Prize Contest are eligible to be read at the annual meeting of the California Medical Association, providing the paper is received by the state secretary before December 20 of the year preceding the annual meeting and approved by the Program Committee. Conversely, papers written primarily for section programs may be entered in the Prize Contest in the following way:

Send two copies of your paper to the state secretary, 1016 Balboa Building, San Francisco, before December 20, with an unsigned note that you wish your essay submitted for a prize and also read at the annual session. Sign your paper with your nom de plume. Also send your name in a sealed envelope with the nom de plume appearing on the outside. Use no stationery that in any way reveals your identity.

The state secretary shall deposit all nom de plume envelopes in a safe until the Prize Committee has made its decision.

The state secretary on receiving a prize paper which is submitted for presentation at the annual session shall submit said paper to the members of the Program Committee. The Program Committee will approve or disapprove it for place on the annual program. The Program Committee will inform the state secretary of its decision, and the secretary will then forward the titles of approved papers to the appropriate section secretary with a simple statement that the paper is acceptable for a place on the program. The Prize Committee will not be informed of this decision and action. A paper may be acceptable for a prize and not for a program, and vice versa.

The Prize Committee shall receive all papers which have been sent to the state secretary, whether approved for publication or not, on or before January 1. The sealed written report of the Prize Committee shall be submitted to the state office before March 1.

The Executive Committee, at the first meeting after March 1 of a given year, shall open the nom de plume envelopes and furnish the secretary the proper names of the authors for the published annual program.

The Council shall consider the report of the Prize Committee at its first meeting of the annual session, and shall announce the result at the first general meeting of the Association.

It is hoped that many papers will be entered by February 15, 1930, the closing date of the competition.

COMPONENT COUNTY SOCIETIES

FRESNO COUNTY

The regular meeting of the Fresno County Medical Society was held on the evening of May 14, at eight o'clock.

Dr. J. R. Walker reported forty cases of nonsurgical treatment of cataract by the use of the lens extract hypodermically. Report follows: After observation of more than two years on a series of forty reported cases, the results were as follows: eight cases were not improved, the cataract developing to maturity. The rest all showed the cataract had been arrested, and all patients had retained the same vision they had at beginning of treatment or had improved vision. Treatment does not seem to remove the opacity in proportion to the improvement in vision. Doctor Walker considers lens extract a valuable treatment in incipient cataract, or in patients in whom the vision is not reduced below that which permits the continuance of the usual vocation. This paper was discussed by Doctors Montgomery and Hare.

Doctor Barkan of San Francisco gave an instructive talk on "Glaucoma and Its Operative Treatment in the Light of Recent Advances." He showed several slides to illustrate the increase in the field of vision, following Elliot's operation. This was discussed by Doctors Madden, Trowbridge, Walker, Mitchell, and Hare.

* * *

The regular meeting of the Fresno County Medical Society was held after dinner at the Californian Hotel on the evening of June 4. Twenty-five members were present.

Dr. G. W. Walker, a member of the Public School Board, told that advice was being given by school physicians to school nurses in treatment of children at school that children be not treated for infections that are not contracted at school.

A motion was made by Dr. C. O. Mitchell, seconded by Doctor Aller and carried, that the Constitution of the Fresno County Medical Society be changed as follows:

Article 12, paragraph 1—The secretary shall call the roll of the Board of Governors at each meeting and keep a written record thereof.

Paragraph 2—Any member of the Board of Governors who absents himself from three consecutive meetings shall *ipso facto* terminate his membership therein.

The scientific program was carried out by members of the society. Dr. C. O. Mitchell described an interesting case in which he and Dr. J. A. Montgomery were associated. The patient was a boy twelve years of age who became ill during the time that other members of the family were having the mumps. There was some swelling of the parotid gland which quickly cleared up, but was followed in about a week

by headache, neck rigidity, positive Kernig, and other signs of meningitis. The blood count showed 7500 white cells of which 60 per cent were polymorphonuclear leukocytes. Lumbar puncture showed the spinal fluid to be under some increase of pressure with 200 white cells to the cubic millimeter of which 90 per cent were lymphocytes. Following the lumbar puncture there was rapid recovery from the symptoms and patient was well within twenty-four hours. Doctor Montgomery, looking through the literature, found a number of similar cases of mump meningitis showing the same recovery after lumbar puncture.

Dr. W. E. R. Schottsteadt described the case of a girl twelve years of age who developed a double lobar pneumonia, following a few days of bronchitis. The child was seen at the office, when diagnosis was confirmed by x-ray. Temperature was 104½ and respiration 50. The patient was sent to the hospital. She rapidly became cyanotic. Four ounces of 1 to 5000 potassium permanganate was given by rectum, repeated in four hours. During the night the child went through a crisis and recovered. This treatment was based on a report appearing in the *Annals of Internal Medicine* in which twenty-three cases were treated by this method, twenty-one recovering and two deaths. In discussion of this case, Doctor Dau said he had some very good results with intravenous injections of 100 cubic centimeters of 65 per cent ethyl alcohol.

Dr. F. R. Ruff showed some interesting slides: (1) partial twins; (2) pyelograms; (3) ruptured diverticulum. He also illustrated the difference between bovine and human tuberculosis.

J. M. Frawley, *Secretary.*

SACRAMENTO COUNTY

The regular meeting of the Sacramento Society for Medical Improvement was held at the Hotel Senator on Tuesday evening, May 21, and called to order by President Pope at 8:40 o'clock.

The minutes of the previous meeting were read and approved.

One case was reported by Doctor Titus of a young man who showed the effects of tularemia. One month ago, while in Nevada, he killed and skinned a rabbit. At that time there was a small abrasion on the index finger of the right hand. Three days later he had a fever, prostration, and malaise. Two days later he had a general adenopathy. He continued to feel chilly every day, and likewise had epistaxis and emesis. This condition cleared very slowly. At the time of the meeting he felt well, but still had large glands in the right axilla and epitrochlear region.

The paper of the evening, "Pitfalls of the Doctor—Cause and Prevention of Malpractice Suits," was given by Dr. R. Gray of the Aetna Life Insurance Company of San Francisco.

Doctor Gray stated that malpractice insurance is purchased to protect the doctor when he is accused of having damaged the body of his patient by the wrongful practice of his profession. This protection is given, first, by defending him with every legal means possible and, second, by paying the claims if such should be paid. He stressed that the proper legal defense is the first service promised.

In case a judgment is rendered, or when the doctor has been at fault, the insurance company settles, and for this reason the policy held by the doctor should not be small.

The reasons for malpractice suits vary, and comprise suits due to unfortunate outcome of cases, to unauthorized work (such as removing tissue when consent has not been given), to an effort to collect a bill—and this last constitutes about 13 per cent of the claims. Careless criticism by other doctors accounts for about 18 per cent.

The paper caused much discussion and many questions, and these questions were answered by Doctor Gray.

The application for membership of Dr. J. Miyasaki was read and voted upon, and Doctor Miyasaki was elected.

The applications for memberships from Doctors Wayne Pollock and L. Barrette were read for the first time.

A communication from Dr. C. Haw, president of the dental society, was read. Doctor Haw, in behalf of the dental society, invited the members of the medical society to witness the showing of a film taken of living tissue and to be shown at the Sutter High School on the evening of June 10.

The report of the board of directors was read. The board of directors recommended that the society sponsor a tea given at the Crocker Art Gallery during the Nurses' Convention, and defray expenses not to exceed $100.

It was moved and seconded that the action of the board of directors be accepted. Much discussion followed, and a standing vote was as follows: for, 12; against, 16.

Doctor Schoff, chairman of the Library Committee, reported that he and several others had met with the chairman of the Board of Education in regard to the proposed medical library in Sacramento. No action was taken, but the matter probably will be taken up two years later, when the legislature again meets.

It was moved and seconded that the report be accepted. Motion carried.

There being no further business the meeting adjourned. H. Schluter, *Secretary.*

SAN BERNARDINO COUNTY

Minutes of the San Bernardino County Medical Society meeting held at Loma Linda on April 2.

The meeting began with the inspection of the new hospital at 6 p. m.

A meeting of the staff of the County Hospital was held at 6:30 o'clock; dinner was served at 7:15 o'clock. There were fifty-eight present.

The following program began at 8:15 o'clock:

"Relation of Diet to Arteriosclerosis and Nephritis," by Dr. H. M. Walton, Loma Linda. Discussion opened by Dr. G. S. Landon, San Bernardino.

"Cardiac Arrhythmias," by Dr. W. E. Macpherson, Loma Linda. Discussion opened by Dr. Gayle Moseley, Redlands.

"Various Aspects of Allergy in Southern California," by Dr. A. R. Roos, Loma Linda. Discussion opened by Dr. A. T. Gage, Redlands.

Minutes of the previous meeting were read and approved. Doctor Gage acted as secretary from this point on.

Meeting adjourned at 10:30 o'clock.

In the absence of Doctor Walton, Doctor Morton of Arrowhead opened the program.

E. J. Eytinge, *Secretary.*

SAN JOAQUIN COUNTY

The stated meeting of the San Joaquin County Medical Society was held Thursday evening at 8:30 o'clock, June 6, in the Medico-Dental Club, 242 North Sutter Street, Stockton.

The meeting was called to order at 8:30 o'clock by Dr. C. V. Thompson, president, presiding.

Twenty-five were in attendance. Those present were: Doctors N. P. Barbour, J. W. Barnes, J. F. Blinn, C. A. Broaddus, H. S. Chapman, Fred J. Conzelmann, J. F. Doughty, Linwood Dozier, F. T. Foard, P. B. Gallegos, H. E. Kaplan, B. M. Krout, G. H. La Berg, Grace McCoskey, R. T. McGurk, F. S. Marnell, B. J. Powell, Dewey R. Powell, George H. Sanderson, F. B. Sheldon, John J. Sippy, C. V. Thompson, A. L. Van Meter, R. L. Owens, Paul R. Noetling; Mr. M. P. Shaughnessy, attorney for the

society, and Dr. Lovell Langstroth, guest and speaker of the evening.

The minutes of the previous meeting were read and approved. The Committee on Admissions reported favorably on the application for membership of Paul R. Noetling, of Linden.

In accordance with the Constitution the chair declared Doctor Noetling duly elected an active member of the society.

The application of membership of Dr. Ione Pinney was read and referred to the Committee on Admissions.

The transfer of Dr. Thomas C. O'Connor, Jr., from Placer County Medical Society was read. Moved by the secretary that Doctor O'Connor be accepted a member on the transfer from Placer County Medical Society. The motion was duly seconded and carried.

A communication from the American Medical Association relative to "The Hospital Number of the Journal" was read and ordered filed.

A communication of the California Tuberculosis Association relative to a course for the study of tuberculosis was read and ordered filed.

Dr. B. J. Powell and Dr. J. W. Barnes, delegates to the state convention, presented their report. The report was read by Doctor Powell.

Doctor McGurk, chairman of the Legal Committee, read the report of the committee. This report was discussed by Mr. Shaughnessy.

It was moved and seconded that the report be accepted. The motion was duly seconded and carried.

Dr. Dewey R. Powell gave notice that he would introduce an amendment to the Constitution at the next meeting of the society that the section on ethics be brought in accord with the ethics of the California Medical Association and the American Medical Association.

The chair presented Dr. Lovell Langstroth of San Francisco, who spoke on the subject, "Constructive Medicine." The beginning of all treatment is diagnosis. Normal health, joy, and happiness depend on satisfactory adjustment with the environment. Constructive medicine deals with the individual as a whole, healing of the physical and mental ills. This may involve the administration of medicine, regulation of diet, prescribing proper exercises, performing an operation or a psychoanalysis of the patient's behavior. Many of the degenerative diseases—arteriosclerosis, arthritis, and the like—can be prevented or much improved by proper diet, exercises, and the correction of postural defects. Exercises make for coördination in other ways. Movements of the body give a power of freedom for expression of the personality. Rhythmic movements free the personality. The psychological aspect of every patient must be carefully considered. The neglect of the mental aspect of the patient by the physician is largely responsible for the existence of numerous cults in our big cities. The physician to be successful must consider the mental aspect of his patient, and the patient's mental development from childhood. According to the reaction to environment, we recognize two types of individuals, the extravert and introvert. The latter is the shut-in personality, in-growing, shy, sensitive, quiet, day-dreaming, and precise. The former is the shut-out personality, outgoing, spontaneous, frank, domineering, boastful, and aggressive.

The speaker defined the inferiority complex as a feeling of defeat, a sense of failure, and its correlate, the superiority complex, as an overcompensation, a boast. The first is self-abasement, the other a mask for it—a bluff. Many of our difficulties in life come from maladjustment; from the mismanagement of the common psychological mechanisms of adaptation, such as poor habit formations in childhood, flounderings in sex adjustment, and an unhealthy trend in the digestion of life's experiences. The general practitioner is frequently little interested in the psychological side of his patients; he tries to evade it, and yet every one of his patients is a psychological problem. The physician does not care to discuss psychologic medicine, largely because he himself is full of inhibition, conflicts and complexes that need adjusting. A good psycho-analytic examination of himself would lead him to a better understanding and appreciation of the mental problems of his patients. The speaker illustrated his talk by citing histories of patients from his practice.

Doctors Sanderson, Doughty, Broaddus, and Dozier discussed the subject.

The chair expressed the appreciation and thanks to the speaker of the evening.

There being no further business the chair declared the meeting adjourned at 10:15 oclock.

FRED J. CONZELMANN, *Secretary.*

SAN MATEO COUNTY

At the regular meeting of the San Mateo County Medical Society, held at Dr. F. H. Smith's home in San Bruno on May 15, the following officers were elected for the current year 1929-30: Harper Peddicord, president; Emir Alan Benner, vice-president; Benjamin H. Page, secretary-treasurer.

Dr. E. F. Ziegelman gave a very comprehensive report of the state convention. Dr. H. Harris gave a very interesting talk on "Medical History in California."

The society is indebted to Mrs. F. H. Smith for a most enjoyable evening.

B. H. PAGE, *Secretary.*

SANTA BARBARA COUNTY

The May meeting of the Santa Barbara County Medical Society was held in the auditorium of the nurses' home of the Cottage Hospital on Monday, May 13.

The minutes of the previous meeting were read and approved.

The secretary then read the applications of Howard Eder and C. C. Park; also application of W. H. Conser of Guadalupe for transfer from the Henry County Medical Society of Illinois.

The membership of the northern part of the county, headed by Doctor Jones, extended an invitation to the society to have the regular June meeting at Santa Maria.

Doctor Brush then introduced Doctors Miller and Thearle of Los Angeles, who gave a most comprehensive discussion on chest surgery, and demonstrated by a series of wonderful x-ray pictures the technique and results of severing of the phrenic nerve, and thoracoplasty, for the relief of advanced tuberculosis.

There being no further business the meeting adjourned.

* * *

The June meeting of the Santa Barbara County Medical Society was held at the Santa Maria Club, Santa Maria, Monday evening, June 10. Barbecued steaks were served at seven o'clock, and an enjoyable time was had in feasting and telling stories.

At the conclusion of the dinner the society went into executive session and the minutes of the previous meeting were read and approved.

Doctor Conser of Guadalupe, a transfer from Henry County Medical Society of Illinois, and Doctors C. C. Park and Howard Eder were unanimously elected to membership.

There were present at the meeting eighteen members of the society and six guests.

At the conclusion of the executive session Dr. George Piness of Los Angeles gave a most interesting and instructive résumé on asthma, which was followed by discussion and questions from all members present.

There being no further business the meeting adjourned.

WILLIAM H. EATON, *Secretary.*

WOMAN'S AUXILIARY OF THE CALIFORNIA MEDICAL ASSOCIATION

Upon call of Dr. William E. Duffield of the California Medical Association a meeting was held in the children's dining room of Hotel del Coronado on May 7, 1929, at 10 a. m., for the purpose of organizing a woman's auxiliary of the California Medical Association.

Present: Dr. William Duffield; Mrs. J. M. McColl, 3544 Thirtieth Street, San Diego; Mrs. Edmund Butler, 2539 Vallejo Street, San Francisco; Mrs. Robert Alway Peers, Colfax; Mrs. W. H. Geistweit, Jr., 3212 Bancroft Street, San Diego; Mrs. George G. Hunter, 356 South Occidental Boulevard, Los Angeles; Mrs. Henry S. Rogers, Petaluma; Mrs. S. H. Miles, Olive View Sanatorium; Mrs. J. M. McCullough, Contra Costa; Mrs. Jesse Walter Barnes, 1536 North Hunter Street, Stockton; Mrs. A. L. Van Meter, 22 East Adams Street, Stockton; Mrs. Frederick F. Gundrum, 2214 Twenty-first Street, Sacramento; Mrs. Barton J. Powell, 44 West Acacia Street, Stockton; Mrs. Harold Gobar, Fullerton; Mrs. Harry Zaiser, Orange County Hospital, Orange; Mrs. R. A. Cushman, 632 North Broadway, Santa Ana.

Doctor Duffield stated that the general purpose of the meeting was to organize the wives, sisters, and daughters of the members of the California Medical Association into a state society composed of county groups. He read the constitution of the National Woman's Auxiliary.

By general consent Mrs. S. H. Miles of Olive View Sanatorium acted as chairman pro tem.

By general consent Mrs. R. A. Cushman of Santa Ana acted as secretary pro tem.

By unanimous vote those present signified their willingness to join such an organization and assist in its formation.

The chairman, Mrs. Miles, stated that it would be impossible for her to attend any further meeting at this convention.

Mrs. Frederick F. Gundrum was nominated and duly elected to serve as vice-chairman in the absence of Chairman Mrs. Miles.

By unanimous consent the meeting was adjourned to Wednesday noon luncheon, and Doctor Duffield was requested to issue a call to all the visiting women eligible by posting a notice on the official blackboard and announcing the time and place of meeting at the San Diego annual session of the California Medical Association.

CLARA R. CUSHMAN,
Secretary pro tem.

* * *

Coronado Beach, California,
May 8, 1929.

The adjourned meeting of the women proposing to organize a woman's auxiliary to the California Medical Association was held in the breakfast room of Hotel del Coronado on the above date at 12 noon.

Vice-chairman Mrs. Frederick F. Gundrum presided.

The vice-chairman called the meeting to order and read a constitution as recommended by the National Woman's Auxiliary of the American Medical Association. It was moved, seconded, and unanimously carried that the constitution be adopted as read.

Following is the constitution as adopted:

Underlying Principles that Shall Govern the Formation and Regulation of the Woman's Auxiliary of the California Medical Association

NAME AND OBJECT

Section 1. The name of this organization shall be "The Woman's Auxiliary of the California Medical Association."

Sec. 2. The purposes of the Woman's Auxiliary are to bring into more active affiliation the wives, adult sisters and adult daughters of the members of the California Medical Association, to encourage kindly social relationships, and to carry on public health education, and philanthropic medical work.

The Woman's Auxiliary, through its memberships in various lay organizations, shall actively contact with any public health work which is an activity of such organization.

COMPONENT SOCIETIES

The Woman's Auxiliary of the California Medical Association, shall consist of all the County Woman's Auxiliaries which are affiliated with the different county medical societies.

MEMBERS

The wives and adult sisters and daughters of the members of the California Medical Association (active, associate, affiliate, or honorary) alone, shall comprise the membership of the California Woman's Auxiliary.

OFFICERS OF STATE AUXILIARY AND ADVISORY BOARD

Section 1. The officers of the State Auxiliary shall be: A president, a first vice-president, a second vice-president, a secretary-treasurer; and these officers, with the president and secretaries of the component county auxiliaries, shall be constituted a board of directors of the state organization.

Sec. 2. The president, the president-elect, and the secretary of the California Medical Association shall be ex-officio members of the said board of directors, and shall act, but shall not have the right to vote, their function being largely of an advisory nature on this board.

OFFICERS OF COUNTY AUXILIARIES AND ADVISORY BOARDS

Section 1. The officers of a state or a component county auxiliary shall be: A president, a first vice-president, a second vice-president, and a secretary-treasurer. These officers shall be constituted as an executive committee.

Sec. 2. For each component county auxiliary there shall be an advisory board consisting of the president, the vice-president, and the secretary of the respective county medical society. The Woman's Auxiliary of a county shall not speak in the name of the medical profession except with the sanction of this advisory board and of the proper officers of the county medical society.

MEETINGS

The annual meeting of the State Auxiliary shall be held during the annual session of the California Medical Association and at the same place. The time and place of meeting shall be set after consultation with the secretary of the California Medical Association.

County auxiliaries shall aim to meet at least once every four months. County auxiliaries shall decide when and where they desire to meet. Conjoint meetings with a county medical society shall be held only if the county medical society so requests. Members of auxiliaries shall not, as individuals, attend county medical society meetings except on invitation from the proper county medical society officials.

DUTIES

The duties of all officers shall be those which usually pertain to such office.

The State and County Auxiliaries shall keep their respective advisory boards informed of the work of their auxiliaries and shall send a copy of the minutes of each meeting of the auxiliaries to the secretary of the State and County Medical Society.

No provision of these regulations shall be amended without the approval of the Council of the California Medical Association.

* * *

The vice-chairman then called for nominations of officers from the floor.

Mrs. Henry S. Rogers of Petaluma was nominated president. Moved, seconded, and unanimously carried, that nominations be closed and the secretary in-

structed to cast the ballot in favor of Mrs. Rogers, which was done.

Mrs. W. H. Geistweit, Jr., of San Diego was nominated first vice-president. Moved, seconded, and unanimously carried, that nominations be closed and the secretary instructed to cast the ballot in favor of Mrs. Geistweit, which was done.

Mrs. John Hunt Shephard, 145 South Twelfth Street, San Jose, was nominated second vice-president. Moved, seconded, and unanimously carried, that nominations be closed and the secretary instructed to cast the ballot in favor of Mrs. Shephard, which was done.

Mrs. R. A. Cushman of Santa Ana was nominated secretary-treasurer. Moved, seconded, and unanimously carried, that nominations be closed, and that the ballot be cast in favor of Mrs. Cushman, which the chairman ordered done.

The following were present:

By general consent the dues for membership in the society were fixed at $1 per year.

RESOLUTION

The following resolution was unanimously adopted, and the secretary instructed to communicate it to the proper bodies:

Whereas, We, the members of the Women's Auxiliary of the California Medical Association here assembled, wish to express our appreciation for the wonderful entertainment which has been given to the wives, sisters, and daughters of the members of the medical associations convened at Coronado Beach; now, therefore, be it

Resolved, That we extend our thanks to the people of San Diego and Coronado who have assisted in this entertainment, particularly to the San Diego County

NAME Mesdames	*Address*	*City*	*County*
Alberty, W. M.	4040 Fairmont Avenue	San Diego	San Diego
Austin, M. O.	34 Twenty-fifth Avenue	San Francisco	San Francisco
Bramkamp, A. L.		Banning	Riverside
Barry, George L.	507 South Second	San Jose	Santa Clara
Burks, Floyd L. R.	2221 San Joaquin	Fresno	Fresno
Cummins, W. T.	107 Ashbury Street	San Francisco	San Francisco
Clark, C. W.		San Anselmo	Marin
Churchill, J. F.	3264 Curlew Street	San Diego	San Diego
Cross, W. W.	1126 Excelsior Avenue	Oakland	Alameda
Card, Thomas A.	216 Oakwood	Riverside	Riverside
Coleman, H. R.	811 Jefferson Street	Napa	Napa
Clough, F. E.	304 Platt Building	San Bernardino	San Bernardino
Cushman, R. A.	632 North Broadway	Santa Ana	Orange
Davis, K. S.	119 South Clark Drive	Los Angeles	Los Angeles
Ewer, Edward N.	2910 Avalon Avenue	Oakland	Alameda
Gray, Roscoe		Yosemite	Mariposa
Gobar, Harold F.	305 North Richman	Fullerton	Orange
Geistweit, W. H., Jr.	3212 Bancroft Street	San Diego	San Diego
Gundrum, Frederick F.	2214 Twenty-first Street	Sacramento	Sacramento
Haskell, Pliny F.	441 Main Street	Artesia	Los Angeles
Haas, Sylvan L.	579 Eleventh Avenue	San Francisco	San Francisco
Harding, Maynard C.	4505 Rhode Island Street	San Diego	San Diego
Inman, Thomas G.	4547 California Street	San Francisco	San Francisco
Jacobs, E. H.	1804 Westmoreland Boulevard	Los Angeles	Los Angeles
Kinney, Lyell C.	1831 Fourth Street	San Diego	San Diego
Little, T. C.	2475 E Street	San Diego	San Diego
Lindsay, W. K.	1027 Tenth Street	Sacramento	Sacramento
Moody, A. M.	2924 Pierce Street	San Francisco	San Francisco
Modern, F. S.		Arrowhead Springs	San Bernardino
Myers, Thomas C.	316 South Rossmore Avenue	Los Angeles	Los Angeles
McCullough, J. M.		Crockett	Contra Costa
McColl, J. M.	3544 Thirtieth Street	San Diego	San Diego
O'Neal, Robert	304 Twenty-fourth Street	Santa Monica	Los Angeles
Percy, James F.	1030 South Alvarado	Los Angeles	Los Angeles
Rogers, Henry S.		Petaluma	Sonoma
Roblee, W. W.	177 Orange Street	Riverside	Riverside
Stoddard, Thomas A.	851 California Street	San Francisco	San Francisco
Shilling, Jerome W.	147 North Rosemont	Los Angeles	Los Angeles
Stein, Charles	509 South Somerset Boulevard	Bellflower	Los Angeles
Stark, J. H.	2340 Lake Shore Boulevard	Oakland	Alameda
Shephard, John Hunt	145 South Twelfth Street	San Jose	Santa Clara
Stephens, Philip	4916 Franklin	Hollywood	Los Angeles
Tebbetts, H. B.	3278 Wilshire Boulevard	Los Angeles	Los Angeles
Van Meter, A. L.	22 East Adams	Stockton	San Joaquin
Woolsey, J. H.	684 Funston Avenue	San Francisco	San Francisco
Zaiser, Harry	Orange County Hospital	Orange	Orange
Zook, A. Z.	Burbank	Los Angeles	Los Angeles

Medical Society, and to the women associated with them.

By unanimous consent the secretary was instructed to write a letter to Mrs. S. H. Miles, temporary chairman, thanking her on behalf of the auxiliary for lending her assistance in the formation of the society.

By unanimous consent Mrs. Gundrum was given a rising vote of thanks for officiating so efficiently as vice-chairman of the organization meeting.

Upon motion the meeting adjourned.

(Signed) CLARA R. CUSHMAN,
Secretary.

CHANGES IN MEMBERSHIP

New Members

Alameda County—Earl H. Daggett, John N. Ewer, Charles L. Freytag, James Hilgesen, Harold R. Smithies, Herman Schwartzmann.

Contra Costa County—Gaines L. Coates, Jr.

Kern County—A. L. Johnson, Louis A. Packard.

Los Angeles County—Carlyle L. Ahrens, Peter H. Blong, Herbert T. Brooks, Ben H. Chamberlain, Henry L. Charles, Peter T. Conlan, Clarence S. Cook, Robert J. Dostal, Paul S. Dougherty, Earl Eames, C. E. Fortin, Peter Adolph Gallant, B. H. Hager, Clemen Hamer, W. J. Harrison, Ernest D. Johnson, Carl E. Krugmeier, W. O. Leach, Samuel Levy, D. R. MacColl, Ronald J. Macdonald, Harry A. Miller, H. R. Mulligan, Rafael S. Olsen, Byron Palmer, J. E. Ragsdale, Orin J. Riddell, A. B. Ross, Lonzo V. Smith, Samuel N. Sperling, Arthur G. Tullar, John W. Weber, Daniel L. Woods.

Merced County—Bruce Earl McDowell.

Napa County—Irving E. Charlesworth.

Orange County—George C. Ruble, Elizabeth W. Tock.

Riverside County—Russell M. Gray.

San Bernardino County—Alma L. Goude.

San Diego County—Lloyd A. Kennell.

San Francisco County—Adolphus A. Berger, Paul G. Capps, Hilda M. Davis, Abelson Epsteen, Anita E. Faverman, Frederick S. Foote, Ramon Gilbert, Joseph B. Giovinco, Louis Jacobs, Clark M. Johnson, Alma S. Pennington, Catherine M. Quinlan, Joseph H. D. Roger, Harry A. Somerfield, Howard W. Stephens.

San Joaquin County—Paul R. Noetling, Ione Pinney.

Santa Barbara County—Howard L. Eder, Charles C. Park.

Transferred Members

Francis R. Hendricks, from San Francisco to Ventura County.

Resignations

Evelyn R. Ott, San Francisco County.
Roger I. Clapp, San Diego County.

Deaths

Crabtree, Hezediah T. Died at San Francisco, May 21, 1929, age 72 years. Graduate of Northwestern University Woman's Medical College, Illinois, 1899. Licensed in California, 1901. Doctor Crabtree was a member of the San Francisco County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

Kelsey, Arthur Louis. Died at Los Angeles, May 19, 1929, age 68 years. Graduate of Jefferson Medical College of Philadelphia, Pennsylvania, 1888. Licensed in California, 1888. Doctor Kelsey was a member of the Los Angeles County Medical Association, an honorary member of the California Medical Association, and a Fellow of the American Medical Association.

O'Brien, Aloysius Paul. Died at San Francisco, June 13, 1929, age 62 years. Graduate of University of California Medical School, San Francisco, 1885. Licensed in California, 1890. Doctor O'Brien was a member of the San Francisco County Medical Society, the California Medical Association, and a Fellow of the American Medical Association.

Reed, Clarence E. Died at San Francisco, June 2, 1929, age 66 years. Graduate of University of California Medical School, San Francisco, 1883. Licensed in California, 1884. Doctor Reed was a member of the Shasta County Medical Society, the California Medical Association, and the American Medical Association.

Six, Clarence Logan. Died at Santa Barbara, May 28, 1929, age 53 years. Graduate of Starling Medical College, Columbus, Ohio, 1901. Licensed in California, 1901. Doctor Six was a member of the San Joaquin County Medical Society, an affiliate member of the California Medical Association, and the American Medical Association.

NEVADA STATE MEDICAL ASSOCIATION

R. R. CRAIG.....President
W. A. SHAW.....President-Elect
H. A. PARADIS.....First Vice-President
R. P. ROANTREE.....Second Vice-President
HORACE J. BROWN.....Secretary-Treasurer
R. P. ROANTREE, D. A. TURNER, S. K. MORRISON.....Trustees

COMPONENT COUNTY SOCIETIES

WASHOE COUNTY

The regular June meeting of the Washoe County Medical Society took place at the City Hall, Reno, June 11, Dr. J. L. Robinson, president, in the chair.

Several communications were read and given over to the appointed committees for decision and report.

The president proceeded to open the scientific program, which was a symposium on the subject of Appendicitis. The first essayist responded with a statistical report of appendectomies and mortality following the same, as gathered in the state for the past five years. This paper was prepared by Dr. W. L. Samuels, who for many years was the city health officer of Reno, and whose ability in that line gave him a better idea of securing material for the subject. It was not a subject for rhetorical composition, but rather one dealing, as far as could be ascertained, with the cold facts of surgical procedure of this type of disease.

A careful survey on the part of Doctor Samuels, assisted by Doctor Hamer, secretary of the Nevada State Board of Medical Examiners, showed that there were many inadequacies in exactness of reports as furnished the department by the physicians of the state. Some were quite complete for the counties named, while from some counties there were no reports at all. The state board secretary is now making an earnest effort to correct these incomplete reports by insisting that the proper data be included in every death report sent in. We wish him success. The following is the report of cases of appendectomies done, with number of deaths following operation by counties where reports were secured:

Counties	Appendectomies	Deaths
White Pine	862	9
Washoe	804	25
Elko	234	8
Churchill	35	3
Humboldt	34	4
Mineral	6	0
Douglass	1	0
Lyon	1	1
	1977	50

There were seven deaths reported from the state at large where no operation had been done. This brings the percentage of deaths for the five past years

in Nevada to a little over 2 per cent. According to the statistics collected by Murphy, and later substantiated by Deaver in his 1923 edition of "Excursions Into Surgical Subjects" wherein the deaths following appendectomies were over 10 per cent in the United States, it would appear that the grade of work done in this special line of surgery in Nevada will not suffer by comparison with that done elsewhere.

Dr. C. W. West followed with a paper on "The Suppurative Appendix and Treatment." Doctor West said he realized that there was a great difference of opinion among surgeons as to how to deal with this serious condition; some surgeons advocating radical removal in spite of pus in the abdomen, others advising drainage with the least possible trauma and a supportive treatment destined to conserve the physical strength of the patient. That there were not, in his opinion, any hard and fast set rules of practice, but that each patient was a case unto himself to be treated according to the conditions present, as determined by history, blood and other tests, and the general determination of the possibilities of the patient's resistance. If it appeared that a quick and simple drainage would be best, then drainage was the operation of choice. In the presence of pus and an abnormally located appendix, it would possibly be wiser to drain and wait for another period when the patient was pus-free to do the appendectomy. Doctor West stated that any operation was more a case of the man doing it than the man having it done. Everything depended upon the training, the experience and the judgment of the operator. Some surgeons were born surgeons, and some had it thrust upon them; the essential element in success was the kind of surgeon the patient employed.

The essay was a complete résumé of conditions present in this type of cases and dwelt on well-established rules of both physiology and pathology. The writer was complimented in the discussion upon his able presentation.

The last paper presented was by Dr. Vinton A. Muller on the topographical area wherein the appendix might be found, and the prognosis dependent upon its location. The essayist reviewed the embryological descent of the appendix, and described the various locations in which it might be possible to find the appendix at operation. The retrocecal location was highly dangerous in inflamed appendices, or in those with pus formation, by reason of its burrowing into the mesentery, the tip being covered and lying in an area where resistance was less than in the pelvic situation. The mortality in all cases of appendectomy would depend upon the degree of inflammation or infection present, and especially upon the character of the infection, also upon the time and trauma spent in removing the offending organ. These conditions, with the degree of resistance of the patient, would be the determining factors in making any statement as to the outcome of the case. Doctor Muller made a good presentation of a very hackneyed subject.

The concluding part of the program was the presentation of a cinema kindly loaned the society by Messrs. Davis and Geck of Brooklyn, dealing with "The Relation of Absorbable Sutures to Wound Healing." This was a very educational picture. It showed the consecutive steps of preparation of the ligatures, and further gave considerable space in the picture as to the proper way to place a suture, emphasis being stressed upon the too common error of tying the ligature too tight.

Dr. S. K. Morrison furnished his own machine and operated it, for which service the society not only unanimously thanked Messrs. Davis and Geck, but our own Doctor Morrison as well.

There were thirty-three members and visitors present, many from distant parts of the state, and others from the California border.

The president stated that no meetings would be held in July and August, but that they would be resumed again in September.

THOMAS W. BATH, *Secretary.*

UTAH STATE MEDICAL ASSOCIATION

WILLIAM D. DONOHER, Salt Lake.....President
H. P. KIRTLEY, Salt Lake.....President-Elect
M. M. CRITCHLOW, Salt Lake.....Secretary
J. U. GIESY, 701 Medical Arts Building, Salt Lake.....
.....Associate Editor for Utah

COMPONENT COUNTY SOCIETIES

SALT LAKE COUNTY

The regular meeting of the Salt Lake County Medical Society was held in the Convention Room of the Newhouse Hotel, Salt Lake City, May 13.

Due to the temporary absence of the president, the meeting was called to order by F. A. Goeltz at 8:05 p. m. Fifty-eight members and twelve visitors were present.

Minutes of the meeting of April 22 were read and accepted without correction.

Wilkie Blood presented two cases of acrodynia.

W. R. Tyndale presented a case of undulant fever with microscopic preparation of the *Bacillus melitensis.*

C. M. Benedict and W. A. Pettit commented upon the case of leprosy now isolated at the Salt Lake General Hospital.

The program consisted of a symposium upon "Epidemic Cerebrospinal Meningitis." T. A. Flood gave the history, L. L. Daines discussed the bacteriology, and Orin A. Ogilvie spoke upon the pathology of this disease.

A moving picture of the intestinal peristalsis, prepared by Professors Carlson and Luckhart of the University of Chicago, was then shown through the courtesy of the Deshell Laboratories. L. J. Paul moved that the society extend a vote of thanks to the Deshell Laboratories for their courtesy. Motion was seconded and carried.

John Brown called for a report of the Special Committee on the Community Clinic, which consisted of C. M. Benedict (chairman), John Brown, and M. M. Nielson. E. F. Root was asked to take the chair while President C. M. Benedict made his report. C. M. Benedict said the Community Clinic had been officially closed, and stated that the committee felt that after an unusually thorough investigation that this action was justified, since the Community Clinic no longer served the purpose for which it was intended, and that its equipment was such that it was impossible to care for patients properly. W. F. Beer moved that the report be accepted and the committee be discharged. Seconded and carried.

Meeting was adjourned at 10:30 p. m.

* * *

Monday, May 27, the Salt Lake County Medical Society held a dinner meeting with the Weber County Medical Society in the ballroom of the Newhouse Hotel at 7 p. m. Attendance was 115.

After dinner the meeting was called to order by C. M. Benedict, president of the Salt Lake County Medical Society, who turned the chair over to A. H. Aland, president of the Weber County Medical Society.

The program, which was arranged by the Weber County Medical Society, was as follows:

"Diseases Due to Allergy"—T. D. Cunningham, Denver, Colorado. Discussion by L. A. Smith and L. S. Merrill, Ogden.

"Modern Treatment of Pulmonary Cavitation," Lantern Slides—W. H. Thearle, Los Angeles, California. Discussion by A. C. Callister, Salt Lake City.

F. P. Miller, who was to talk upon the same subject, was unable to attend the meeting.

Meeting adjourned at 10:50 p. m.

* * *

The regular semi-annual business meeting of the Salt Lake County Medical Society was held in the

Convention Room of the Newhouse Hotel, Monday, June 10.

Meeting was called to order at 8 p. m. by President C. M. Benedict. Twenty-seven members were present.

Minutes of the meetings of May 12 and May 27 were read and accepted without correction.

Mark Brown showed roentgenograms of "Pelvic Mensuration in Pregnancy." His remarks were discussed by W. F. Beer, Sol Kahn, J. P. Kerby, and E. P. Oldham.

A communication from the Council on Medical Education and Hospitals of the American Medical Association asking for suggestions concerning the cutting down of hospital conferences was read. This communication was discussed by J. P. Kerby, Sol Kahn, and A. C. Callister. A. C. Callister moved that a committee be appointed to draft a resolution and make suggestions regarding hospital conferences and medical society programs. The following committee was appointed by President C. M. Benedict: Sol Kahn (chairman), J. P. Kerby, R. J. Alexander, and William F. Beer.

A communication was read from the Maternal Welfare Committee explaining some of their work on maternal welfare and infant welfare.

A letter of thanks from the Weber County Medical Society for courtesies extended members during the meeting of May 27 was read.

Report of committees was then called for. A. C. Callister gave a verbal report for the Committee on Public Health and Legislation. He asked for coöperation of members of the Salt Lake County Medical Society regarding questions asked them pertaining to experiences with contract work and welfare work, in order that the committee might obtain information which might be of value in its investigation of cooperative medical societies.

F. M. McHugh, reporting for the Medico-Legal Society mentioned several cases in which the committee had aided the members, and stated that as most cases start from inadvertent remarks made in physicians' offices, the committee requested that the physicians use precaution in discussing work done by colleagues.

There was no report of the Library Committee or the Boy Scouts Committee.

C. M. Benedict gave a verbal report of the Program Committee, and asked for any suggestions regarding the future meeting.

J. P. Kerby gave the following report of the Special Committee on fee schedule:

"The Special Committee, appointed to consider the revision of the present fee schedule of this society, has no report to submit in the matter of fee revision. It is considering the matter in connection with the appropriate committee of the state society.

"It has considered the letter of the executive secretary of the Castle Gate Disaster Fund, and desires to recommend as follows: For work done by members of this society, the fee schedule of the Industrial Commission be followed in the case of calls and minor operations; for major cases, a reasonable discount be given; that the secretary of this fund be advised that a letter should be written to the secretary of the society, of which the physician doing the work is a member, for the ruling of that particular society in regard to its members; that this society should not attempt to set fees for other county societies."

A report of the Necrology Committee, J. U. Giesy, chairman, was read, giving a short obituary of Harry R. Welch. The following resolution was passed by the society:

Whereas, It transpires that a Higher Wisdom than ours has seen fit to recall our comrade and coworker, Dr. Harry R. Welch, from that field of activity in which he has so long been an honored member; and

Whereas, We, his fellow members in the Salt Lake County Medical Society, mark his passing with a deep and lasting regret; therefore, be it

Resolved, That we take this formal means of expressing our sincere sorrow in his loss; that a copy of this resolution be spread upon the minutes of the society, and a copy sent to the widow and family of the deceased.

Under "New Business" R. J. Alexander spoke briefly of some of the problems of the Salt Lake General Hospital, and asked the members of this society to coöperate in every possible way with the hospital administration. This talk was discussed by A. C. Callister, William F. Beer, Spencer Wright, William T. Ward, Clark Young, and C. M. Benedict. William T. Ward moved that return postcards be sent to each member of the society in order to obtain information whether or not such a member would be interested in doing work at the Salt Lake General Hospital. Motion seconded and carried.

Meeting adjourned at 9:45 p. m., after which an informal smoker was held.

BARNET E. BONAR, *Secretary.*

UTAH NEWS

A regular meeting of the Central Utah Medical Society was held May 7 at Richfield.

Dr. R. T. Richards of the Salt Lake Clinic gave a very interesting paper on the "Goiter Problem in the Intermountain Region."

The society also discussed the advisability of placing maternity work on a strictly cash basis. A vote was called on the matter and carried by a large majority. A committee was appointed to make an announcement in the local papers with reference to the adoption of this measure.

* * *

The final meeting for the spring season of the Holy Cross Hospital Clinical Association was held the evening of May 20 at the Holy Cross Hospital.

Dr. E. F. Root presented a paper on "Cyst of the Spleen."

Dr. M. M. Nielson followed with a paper on "Arthritis of the Hip."

A demonstration of pathological specimens from the hospital laboratory, covering work of the past few weeks, closed the program.

Dr. T. A. Flood showed these specimens and talked upon the pathology of each.

Meetings will be suspended until fall, when they will be resumed.

* * *

Four Salt Lake Medical Reserve Officers Ordered to Duty.—Four Salt Lake Medical Reserve officers have been ordered to active duty, effective July 14, at the Presidio, San Francisco, where they will report to the commanding officer at the Letterman General Hospital. The following men will report: Colonel Willard Christopherson, Lieutenant-Colonel Chauncey M. Benedict, Major James G. Van Scoyoc, and Second Lieutenant Harold W. Cole.

Lieutenant-Colonel Copley Enos, executive officer of the Fifth Reserve District of the Third Reserve Area, just left for the Duchesne country and southern Utah to contact reserve officers. Captain T. R. Kerschner, artillery instructor, has left for Boise to instruct the Idaho National Guard, which is in training.

* * *

Harry R. Welch, 1878-1929

Dr. Harry R. Welch, a well-known physician, age fifty-one, of 123 U Street, died at his home Monday, May 27, of complications resulting from mastoid trouble. He was born in Nelsonville, Ohio, in 1878, graduated in medicine in 1905, and practiced his profession in the vicinity of Nelsonville prior to coming to Salt Lake in 1912. Since that time he had lived in this city, and had recently maintained offices in the Deseret Bank Building.

He was taken sick in February, and became seriously ill Saturday. He is survived by his widow and two children, Charles and Dorothy Welch, all of Salt Lake.

MISCELLANY

Items for the News column must be furnished by the twentieth of the preceding month. Under this department are grouped: Comment on Current and Recent Articles in the Journal; News; Medical Economics; Correspondence; Department of Public Health; California Board of Medical Examiners; and Twenty-Five Years Ago. For Book Reviews, see index on the front cover, under Miscellany.

NEWS

University of California Medical School.—Appointments, promotions, resignations, effective July 1, 1929:

Appointments—Joseph L. McCool, associate clinical professor of ophthalmology.

E. Ogden, instructor in physiology.

P. L. Kirk, instructor in biochemistry (formerly research associate).

Isabel H. Perry, instructor in pathology.

A. M. Moody, instructor in pathology.

W. A. Reilly, instructor in pediatrics.

D. G. Morton, instructor in obstetrics and gynecology.

S. R. Mettier, assistant professor of medicine and pathology (absent on leave 1929/30).

Werner Schmidt, assistant professor of biochemistry.

Minola Stallings, instructor in pediatrics.

Promotions—Z. E. Bolin, from instructor in pathology to assistant professor of pathology.

T. L. Althausen, from instructor in medicine to assistant professor of medicine.

R. L. McCalla, from instructor in medicine to assistant clinical professor of medicine.

C. L. Hoag, from instructor in surgery to assistant clinical professor of surgery.

A. R. Kilgore, from instructor in surgery to assistant clinical professor of surgery.

William B. Faulkner, from instructor in surgery to assistant clinical professor of surgery.

L. P. Player, from instructor in urology to assistant clinical professor of urology.

S. Olsen, from instructor in urology to assistant clinical professor of urology.

H. E. Ruggles, from associate clinical professor of roentgenology to clinical professor of roentgenology.

L. Bryan, from assistant clinical professor of roentgenology to associate clinical professor of roentgenology.

R. S. Stone, from instructor in roentgenology to assistant professor of roentgenology.

E. Wolff, from instructor in pediatrics to assistant clinical professor of pediatrics.

Alice Maxwell, from associate clinical professor of obstetrics and gynecology to clinical professor of obstetrics and gynecology.

Dorothy W. Atkinson, from instructor in medicine to assistant clinical professor of medicine.

Florence M. Holsclaw, from associate clinical professor of pediatrics to clinical professor of pediatrics.

Howard C. Naffziger, from clinical professor of surgery to professor of surgery.

J. W. Shiels, from lecturer in medicine to associate clinical professor of medicine.

H. E. Miller, from associate clinical professor of dermatology to clinical professor of dermatology.

M. I. Rose, from instructor in physiology to assistant professor of physiology.

A. Weeks, from associate clinical professor of surgery to clinical professor of surgery.

C. F. Gelston, from instructor in pediatrics to assistant clinical professor of pediatrics.

E. B. Shaw, from instructor in pediatrics to assistant clinical professor of pediatrics.

J. F. Rinehart, from assistant in pathology to instructor in pathology.

F. C. Linde, from assistant in orthopedic surgery to instructor in orthopedic surgery.

J. W. Crawford, from assistant in ophthalmology to instructor in ophthalmology.

C. M. Johnson, from assistant in urology to instructor in urology.

Naffziger Takes Surgery Post in Medical School.—Dr. Howard C. Naffziger, one of the outstanding brain surgeons of the United States, has accepted the position of professor of surgery in the University of California Medical School, according to announcement by Dean Langley Porter. Doctor Naffziger's appointment becomes effective July 1.

From 1919 to 1924 he was connected with the University of California as assistant clinical professor of surgery. He was neurological surgeon at the Medical School in 1924 and served in a similar capacity at St. Mary's Hospital, Mary's Help Hospital, the Marine and Public Health Service and the United States Veterans' Bureau, and as consulting neurological surgeon in the Children's Hospital and the San Francisco Hospital.

Doctor Naffziger is a member of the San Francisco County, California State and American Medical Societies, the San Francisco Neurological Society, the San Francisco Academy of Medicine, the Central Neuropsychiatric Society, Society of Neurological Surgeons, the American Neurological Society, American Society for the Advancement of Science, the Pacific Coast Surgical Society, and the Johns Hopkins Surgical Society; he is a Fellow of the American College of Surgeons.

The contributions of Doctor Naffziger to medical and surgical publications have been numerous and important. Most of them have to do with neurological surgery.

Noted Physician Joins University of California Staff. Announcement has just been made by Dean Langley Porter of the University of California Medical School that Dr. Joseph L. McCool, one of America's leading eye specialists has accepted an appointment to the Medical School faculty as associate clinical professor of ophthalmology, starting July 1.

Doctor McCool was born April 25, 1879. He was graduated from the University of Pennsylvania Medical School in 1900. After graduation he served as resident physician at Howard Hospital, and the General Hospital, Philadelphia; assistant surgeon at the Volunteer Soldiers' Home Hospital, Hampton, Virginia; deputy quarantine physician for the State of Pennsylvania, under two governors; and practiced ophthalmology in Philadelphia and in Portland, Oregon, for twenty-two years, 1907 to 1929.

Among other hospitals with which he has been affiliated, and institutions at which he has taught, are: the Temple Medical School, Samaritan and Garretson hospitals, University of Pennsylvania Postgraduate School, Philadelphia General Hospital, all in Philadelphia; and the Doernbecher Hospital, the Portland Sanatarium, the Eye, Ear, Nose and Throat Hospital, and the University of Oregon medical department, in Oregon.

He holds a certificate in ophthalmology from the American Ophthalmic Examining Board, and is a member of the American Ophthalmological Society, the American Academy of Ophthalmology and Otolaryngology, American Medical Association, American College of Physicians and Surgeons, Pacific Coast Oto-ophthalmological Society, the Oregon State Medi-

cal Society, the Portland City and County Medical Society, and the Oregon Academy of Ophthalmology and Otolaryngology.

He was president of the Pacific Coast Oto-ophthalmological Society (1915-16), president of the Oregon Academy (1929), member of the Council of the American Academy of Ophthalmology and Otolaryngology for one year, associate on the Ophthalmic Year Book for two years, and an aide on the American Board for Ophthalmic Examinations for three years. In addition he is author of some twenty publications dealing with his field of medicine.

Southern Pacific General Hospital Meeting.—The regular staff meeting of the Southern Pacific General Hospital was held on Wednesday, June 5, at 8:30 a. m. The program consisted of a discussion of the fatalities for the month of May, held in a thirty-minute session. It was followed by the regular weekly medical consultation. During the months of July and August morning staff meetings will be held.

The Samuel D. Gross Prize of $1500 for essays on surgical pathology or surgical practice will be open for competition until January 1, 1930.

The conditions annexed by the testator are that the prize "shall be awarded every five years to the writer of the best original essay, not exceeding one hundred and fifty printed pages, octavo, in length, illustrative of some subject in surgical pathology or surgical practice founded upon original investigations, the candidates for the prize to be American citizens."

It is expressly stipulated that the competitor who receives the prize shall publish his essay in book form, and that he shall deposit one copy of the work in the Samuel D. Gross Library of the Philadelphia Academy of Surgery, and that on the title page it shall be stated that to the essay was awarded the Samuel D. Gross Prize of the Philadelphia Academy of Surgery.

The essays, which must be written by a single author in the English language, should be sent to the "Trustees of the Samuel D. Gross Prize of the Philadelphia Academy of Surgery, care of the College of Physicians, 19 South Twenty-second Street, Philadelphia," on or before January 1, 1930.

Each essay must be typewritten, distinguished by a motto, and accompanied by a sealed envelope bearing the same motto, containing the name and address of the writer. No envelope will be opened except that which accompanies the successful essay.

The committee will return the unsuccessful essays if reclaimed by their respective writers, or their agents, within one year.

The committee reserves the right to make no award if the essays submitted are not considered worthy of the prize.

WILLIAM J. TAYLOR, M. D.
JOHN H. JOPSON, M. D.
EDWARD B. HODGE, M. D.
Trustees.

Philadelphia, May 20, 1929.

Summer Course for the Study of Tuberculosis offered by California Tuberculosis Association, under the direction of Allen K. Krause, M. D., Johns Hopkins Medical School, July 15 to 26, inclusive.

Address all communications to California Tuberculosis Association, Griffith McKenzie Building, Fresno, California.

Monday, July 15, at White Memorial Hospital, Los Angeles:
9 a. m.—Lecture, The Tubercle Bacillus, Allen K. Krause, M. D.
10 a. m. to 1 p. m.—Laboratory, Culture and Isolation Methods, Staining of Specimens, Newton Evans, M. D.
2 p m.—Lecture, The Basis of Physical Diagnosis, Charles C. Browning, M. D.
3 p. m.—X-Ray Interpretation, Ray A. Carter, M. D.
4 p. m. to 5:30 p. m.—Lecture, Technic of Chest Examination, F. M. Pottenger, M. D.

Tuesday, July 16, at White Memorial Hospital, Los Angeles:
9 a. m.—Lecture, Elementary Pathology, Allen K. Krause, M. D.
10 a. m. to 1 p. m. — Laboratory, Inoculation of Animals. Experimental Tuberculosis. Gross Human Pathology. Microscopic Pathology.
2 p. m.—Discussion, History taking, Carl R. Howson, M. D.
3 p. m.—X-Ray Interpretation, Ray A. Carter, M. D.
4 p. m. to 5:30 p. m.—Lecture, Tuberculous Laryngitis, Bertram C. Davies, M. D.

Wednesday, July 17, Los Angeles County Hospital:
9 a. m.—Clinical Instruction.
2 p. m.—Clinical Instruction.
4 p. m. to 5:30 p. m. — Lecture, Infection, Allen K. Krause, M. D. (White Memorial Hospital).

Thursday, July 18, Los Angeles County Hospital:
9 a. m.—Clinical Instruction.
2 p. m.—Clinical Demonstration, Tuberculosis in Children, William M. Happ, M. D. (Children's Hospital).
4 p. m. to 5:30 p. m. — Lecture, General Pathology, Allen K. Krause, M. D. (White Memorial Hospital).
8:15 p. m.—Lecture, Epidemiology, Allen K. Krause, M. D. (White Memorial Hospital).

Friday, July 19:
9 a. m.—Tuberculosis Organizations, Sanatorium Visits—Olive View Sanatorium, W. H. Bucher, M. D., Superintendent; Elliott P. Smart, M. D., Chief, Medical Service; Charles D. Lockwood, M. D., Chief, Visiting Surgical Staff.

Saturday, July 20:
Elective—Visits to institutions of interest.

Monday, July 22:
9 a. m.—Lecture, Hypersensitiveness, Allen K. Krause, M. D. (White Memorial Hospital).
11 a. m. to 1 p m.—Laboratory, Tuberculin Reactions, Animal Tests for Tuberculosis, Newton Evans, M. D.
2 p. m.—Clinical Instruction (Los Angeles County Hospital).
4 p. m. to 5:30 p. m. — Lecture, Tuberculosis of the Skin, Anstruther Davidson, M. D. (White Memorial Hospital).

Tuesday, July 23:
9 a. m.—Lecture, Immunity, Allen K. Krause, M. D. (White Memorial Hospital).
11 a. m. to 1 p. m. — Laboratory, Tuberculin Reactions, Pathological Conditions and Tuberculins, Newton Evans, M. D.
2 p. m.—Clinical Instruction at Los Angeles County Hospital.
4 p. m. to 5:30 p. m.—Lecture, The Heart in Tuberculosis, Donald J. Frick, M. D. (White Memorial Hospital).

Wednesday, July 24:
9 a. m.—Clinical Lecture, Urological Tuberculosis, Robert V. Day. M. D.
10 a. m.—Clinical Instruction (Tuberculous Laryngitis, Section 1, 2, 3), (Los Angeles County Hospital).
2 p. m.—Clinical Instruction (Los Angeles County Hospital).
4 p. m to 5:30 p. m.—Lecture, Nonpathogenic Acid-fast Bacilli, Allen K. Krause, M. D. (White Memorial Hospital).

Thursday, July 25:
9 a. m.—Clinical Demonstration, Orthopedic Tuberculosis, John C. Wilson, M. D. (Children's Hospital).
10 a. m.—Clinical Instruction (Los Angeles County Hospital).
11 a. m. to 1 p. m.—(Tuberculous Laryngitis, Section 4, 5, 6).
2 p. m.—Clinical Instruction (Los Angeles County Hospital).
4 p m. to 5:30 p. m.—Lecture, History of Tuberculosis, Allen K. Krause, M. D. (White Memorial Hospital).
5:30 p. m. — Dinner and Smoker, Question Box, Allen K. Krause (University Club).

Friday, July 26:
9 a. m.—Sanatorium visits—Pottenger Sanatorium, F. M. Pottenger, M. D., and staff.
2 p. m.—Barlow Sanatorium, Munford Smith, M. D., and staff. Sanatorium Technique—R. L. Cunningham, M. D.

Examination for Entrance Into Regular Corps of United States Public Health Service.—Examination of candidates for commission as assistant surgeon in the Regular Corps of the United States Public Health Service will be held at the following-named places on the dates specified:

At Washington, D. C., September 9, 1929.
At Chicago, Ill., September 9, 1929.
At New Orleans, La., September 9, 1929.
At San Francisco, Cal., September 9, 1929.

Candidates must be twenty-three years and not over thirty-two years of age. They must have been graduated in medicine at a reputable medical college, and have had one year's hospital experience or two years' professional practice. They must satisfactorily pass oral, written, and clinical tests before a board of medical officers, and undergo a thorough physical examination.

Successful candidates will be recommended for appointment by the President, with the advice and consent of the Senate.

Request for information or permission to take this examination should be addressed to the Surgeon-General, United States Public Health Service, Washington, D. C.

Sedgwick Medal Award.—The American Public Health Association announces that the first award of the Sedgwick Memorial Medal will be considered in 1929. This award was established in honor of the late Professor William Thompson Sedgwick, a former president of the American Public Health Association. The fund which provides the medal was raised by popular subscription from Professor Sedgwick's former students and friends. It is to be awarded for distinguished service in public health.

Except for the fact that it is limited to the recognition of service in the field of public health, there is no restriction as to the special line of service that will be considered. Administration, research, education, technical service and all other specialties in the public health profession will receive equal consideration. No limitations as to age, sex, or residence have been fixed, though only candidates who are nationals of the countries in the American Public Health Association—at present, United States, Canada, Cuba, and Mexico are eligible.

The committee of the association which has this matter in charge is composed of: Mr. Homes N. Calver, secretary; Dr. Charles B. Chapin, Dr. Lee K. Frankel, Professor E. O. Jordan, Dr. George W. McCoy, Dr. M. P. Ravenel, Dr. M. J. Rosenau (chairman), Mr. Robert Spurr Weston.

The committee will not consider direct applications from candidates, but asks for nominations, giving the information suggested in the accompanying form. Nominations should be addressed to the secretary, Homer N. Calver, 370 Seventh Avenue, New York, N. Y., and should include the following:

Name of the proposed candidate.
Residence address.
Business address.
Age.
Country of which the candidate is a citizen.
Degrees held, date received and institutions from which received.
Principal public health positions held.

A brief description of the distinguished service performed because of which the candidate is recommended for consideration. This should include information as to when and where the work was done, the name of the organization or institution, if any, under whose auspices or in whose service the candidate worked, an estimation of the direct or indirect effect of the work measured in terms of life-saving or benefit to humanity. Descriptive articles, reports or similar data published or unpublished will be helpful to the committee. To be considered, the service must have been actually performed and not be merely a plan or suggestion.

Anonymous recommendations will not be considered, and the committee reserves the right to refrain from making an award this year.

Public Health Honor.—President Herbert Hoover, Surgeon-General H. S. Cumming of the United States Public Health Service, and Dr. Frederick F. Russell of the Rockefeller Foundation have been elected honorary members of Delta Omega, the honorary public health society. The gold key and the certificate of the society were presented to President Hoover at the White House on June 18, 1929, by Lieutenant-Colonel E. G. Huber and Dr. James A. Tobey, national president and secretary, respectively. Surgeon-General Cumming also participated in this ceremony. The only other honorary member of Delta Omega is Dr. Charles V. Chapin of Providence, Rhode Island, former president of the American Public Health Association. One of the six chapters of the society is at the University of California, the others being at Johns Hopkins, Harvard, Yale, Massachusetts Institute of Technology, and University of Michigan.

CORRESPONDENCE

Rome, June 2, 1929.

To the Editors:

I am enclosing a short paper of some observations I have made of some of the interesting problems of the tuberculosis situation in Italy which I thought would be acceptable to the journal and interesting to its readers.

It is indeed interesting to see what can be accomplished in a country where practically all the thinking people believe in and support the government, and the others dare not disobey.

* * *

TUBERCULOSIS SITUATION IN ITALY

As one studies the tuberculosis problem in the various countries of the world, one is impressed by the fact that the fundamental principles on which the prophylactic campaign must be carried out are essentially the same. Usually a handful of devoted workers labor for years without evidence of effective results to give encouragement to their efforts, until finally the result of their labors is expressed in a national awakening and the transposition of apparently hopeless endeavor into effective, regulated activity.

During a few months' residence in Rome I have quite naturally become interested in some phases of a very interesting campaign against tuberculosis; interesting, first, because it is still in the making. Italy is one of the last of the great nations that has officially recognized a national, governmental responsibility to her people for the ravages of tuberculosis and the great economic loss they suffer. A government as enlightened as the present Italian Government can do much in such a campaign to avoid the errors and pitfalls encountered by her older sisters—older in experience in the fight against the white scourge. It is intensely interesting because in Italy the terms "statute" and "enforcement" are practically identical. The observance of a law in the breach is unknown in the present-day Italy, and thus public health statutes are, and will be, rigidly enforced with an efficiency which would be tyrannical, were it not for the fact that these laws are promulgated and effectively exercised by a beneficent, enlightened government at the head of which resolutely stands a great leader of men, who, only a few years ago, did more to save Italy and all of Europe from chaos than most Americans realize.

Italy, before the war, and as late as 1924, had not developed her antituberculosis campaign to any great extent. She had her groups of workers, but with an

apathetic government and indifferent population generally, the enthusiasm of these workers was not aided by governmental support and financial assistance.

While a few cities in northern Italy, like Milan, were doing some effective work through organization, there were no antituberculosis organizations of any kind throughout central and southern Italy.

Of course the moderate mortality from tuberculosis in Italy did not present the danger in as acute and impelling a form as in various other countries. In 1925 the mortality from all forms of the disease in Italy was 60,000; this in a total population of 40,000,000.

Such was the indifference of the government, that in the early postwar years there were in Italy less than eight thousand beds for tuberculosis, public and private, and no governmental support of antituberculosis activity.

It has been indeed fortunate for Italy that the advent of the Fascisti Government has produced a vigorous awakening of the national conscience in this as in other fields of national life. It would require too much space to go into detail concerning the development of the present Italian Government, or the personality of the man who conceived it and brought it to its present condition of efficiency. Greatest among the present leaders of men in Europe, Mr. Mussolini was not only able to visualize the need of public health measures, but was wise enough to call competent scientific men to his assistance, and sufficiently determined and powerful to respond to the necessity of tuberculosis relief with legal enactment.

In this way the institution of provincial antituberculosis associations has been made compulsory by law, and, fully as important, the functioning and cooperation of these associations was regulated. Provision was also made to supply the various provinces with the organization which represents the pivotal point of the campaign, namely, the tuberculosis dispensary. Such institutions, already successful in large central cities like Rome and Milan, have been established in recent years in all the provinces where they are needed. At the present time Italy has more than 200 dispensaries, and it is reasonable to assume that in the near future this number will be considerably increased.

Probably the most immediately urgent problem in the prevention of tuberculosis which faced the Fascisti Government was the housing and hospital care of tuberculous patients, amounting to approximately four hundred thousand.

The serious deficiency in the number of sanatoria and beds for tuberculous patients, and the large outlay which would be necessary to meet the expense of adequate equipment, prompted Mr. Mussolini, with the help of his expert advisers, to enact a law last October, providing for compulsory insurance against tuberculosis for all employees. This affects about 8,500,000 citizens, who will be entitled to treatment in sanatoria should they suffer from tuberculosis and be no longer able to work. Half of the insurance contribution is paid by the employer, and the other half by the employee, varying from 4 to 8 lire (20 to 40 cents) monthly. This also provides an allowance for wife and children during the illness of the head of the family.

This law, which is already in force, has enabled the National Bank for Social Insurance (to which has been entrusted the insurance alluded to above) to devote considerable sums to the building of sanatoria, and it is probable that within ten years Italy will have completed its work of providing beds for tuberculous patients. At the present time the number of beds in sanatoria and hospital sanatoria is approximately twenty thousand.

Several private and semipublic sanatoria are also under consideration or in course of construction. In southern Italy, alone, six are now being built.

Nothing has here been said with reference to the most important problem of tuberculosis, prophylaxis in relation to childhood. Much constructive work is being done in this field, but the subject is too comprehensive to be dealt with here. I shall endeavor to discuss it in a subsequent paper.

Finally, by the wish of Mr. Mussolini, and through voluntary contributions of the Confederation of Fascisti Tradesmen, an imposing "University Institute for Tuberculosis" is being built. It will be under the direction of Professor Morelli, a former pupil of Forlanini, and who will carry on the work and methods of that great teacher. The institute will be called the Benito Mussolini Institute, a fitting monument to one who, in addition to his other great constructive achievements, has done so much and in so short a time to raise Italy to a place among the progressive nations in the field of tuberculosis prophylaxis. In a city peculiarly rich in enduring monuments to great men of the past, may this fitting memorial to Italy's great modern statesman stand amidst the glory of achievement, a permanent tribute to a great humanitarian principle, when these magnificent ruins of tufa, travertine, and marble, which commemorate the men that made the great Roman Empire, have disintegrated and been forgotten.

* * *

Please continue to have the journal sent to my Rome address as heretofore. It is nice to be kept in touch with medical activities at home.

With best wishes to you, believe me,

Sincerely yours,

GEORGE H. EVANS.

TWENTY-FIVE YEARS AGO*

EXCERPTS FROM OUR STATE MEDICAL JOURNAL

Vol. II, No. 7, July 1904

From some editorial notes:

. . . ***The A. M. A. Meeting.***—The fifty-fourth annual meeting of the American Medical Association was the most successful in its history, so far as attendance was concerned. Something over 2800 members registered at Atlantic City. . . .

. . . The Association must, sooner or later, recognize that a control which makes its journal the "greatest advertising medium for proprietary preparations" in the United States is not the control that will hold together state associations which do not approve of this policy; there are such, and their number is rapidly increasing. . . .

. . . ***Hall of Exhibits.***—A criticism that has been made in previous years can be repeated this year, if one considers the hodgepodge of stuff in the "Hall of Exhibits" at the A. M. A. meeting. It is a disgrace to the Association that it should permit the foisting of nostrums upon physicians at these meetings. . . .

. . . The responsibility rests with the trustees; it is plainly up to them to insist upon decency, or else openly confess that the Association is out for money, clean or dirty, so long as it is money; that money, and not a high professional standing, is what they are after. . . .

. . . ***Important Decision.***—An exceedingly important decision has recently been handed down by the Supreme Court of North Carolina. The case at issue was one involving the constitutionality of the Dental Practice Act, and was, in every essential particular, identical with the case, *Ex Parte* Gerino, just decided by the Supreme Court of this state. A summary of the decision is published in the *Journal of A. M. A.*, April 9. The points decided are the power of the legislature to require an examination; the exercise of police power by the state for the protection of the public, as against the conferring of special privileges; the right to require an applicant to comply with every requirement of the law before taking an examination; and the right of the legislature to delegate its appointive power to

* This column aims to mirror the work and aims of colleagues who bore the brunt of state society work some twenty-five years ago. It is hoped that such presentation will be of interest to both old and recent members.

a recognized society or association of professional men who are assumed to be better able to intelligently select the examiners who shall carry out the requirements of the legislature. . . .

From an article on "Supreme Court Sustains the California State Medical Law":

This issue of the state journal prints in full below the decision of the Supreme Court, sustaining in every particular the constitutionality of the Medical Practice Act. The decision should be carefully read by every physician in the state, for it is a clear, exhaustive and scholarly document, completely setting at rest all contention as to the constitutionality of the act. . . .

From an article on "Malarial Nephritis" by George F. Reinhardt, M. D., Berkeley:

Nephritis from malarial poisoning is not uncommon, but is not always recognized as malarial in origin. . . .

. . . I present the following cases as examples of malarial nephritis. The diagnosis is fortified by the fact that with quinin, recovery was brought about in each case. . . .

From an article on "The Medico-Legal Responsibilities of the Physician in Cases Where Insanity is Alleged as a Defense" by J. W. Robertson, M. D., Livermore:

. . . In law nothing is good that is not old, and, until precedents have fossilized an idea and encrusted it with hundreds of decisions, it does not become a legal maxim. Medicine and law are incompatible and are types of the extremist radicalism and conservatism. In the past hundred years no science has made greater progress than medicine, while law remains a question of precedents and procedures. . . .

. . . At present the only safe course a medical expert can honorably follow is to refuse to go on the witness stand unless, after a full investigation, he becomes convinced, not that he can answer the hypothetical question honestly, but that he can fully enter into the merits of the case, and know that his contentions have a basis of absolute truth. . . .

From an official notice to county secretaries:

There are some of the secretaries of county societies who seem not to understand the relation existing between the several county organizations and the state society.

The state society is simply an organization composed of members of the component societies, and is maintained by a per capita assessment on members of these affiliated county societies. . . .

. . . The state journal is the property of the state society, and consequently is owned jointly by every member of every affiliated county society. This being the case, the secretaries of these county societies, representing their membership, should act as their spokesmen, and send in monthly reports, medical news items of interest to their members, notices of marriages, births and deaths, reports of meetings, changes of location; in fact, should act in the capacity of a subeditor of the journal. This work may take some time, and may be thought a hardship by some, but the county secretaries are the ones who keep in touch with their members, and are, therefore, in a position to get the news. . . .

From some personals:

. . . Dr. Walter Lindley, editor of the *Southern California Practitioner*, has recently been elected dean of the Medical College of the University of Southern California. This Los Angeles school is now entering its twentieth session. Doctor Lindley was one of the organizers of the school, and is professor of gynecology in that institution. . . .

DEPARTMENT OF PUBLIC HEALTH

By W. M. Dickie, M. D., *Director*

Activity Shown in Organization of Mosquito Abatement Districts.—The organization of the largest mosquito abatement district in the state is almost completed. This district will include most of Alameda County. Its organization has been approved by the city councils of all of the municipalities to be included within the district. The cities of Oakland, Berkeley, Alameda, San Leandro, Hayward, and Albany are integral parts of the proposed district. Under the tax levy, as provided under the Mosquito Abatement District Act, about $50,000 dollars will be available annually for mosquito abatement work in the East Bay district. The petitions for the organization of the district are now being circulated and there is every reason to believe that the organization will be perfected within a short time.

There is a large amount of work to be done in mosquito abatement in the salt marshes along the eastern shores of San Francisco Bay. The winds blow the salt marsh mosquitoes from their breeding places to all of the cities in Alameda County. Their invasion constitutes a distinct menace to the health and comfort of East Bay residents. The Anopheles mosquito, which transmits malaria, is not found in this district, but the salt marsh mosquito, which is particularly voracious, abounds there in tremendous numbers.

Another mosquito abatement district is in process of formation in North Sacramento. The city council has approved of the organization of the district, and the petition required by law has been signed. Action now is dependent upon the Sacramento County Board of Supervisors. The proposed district will include the city of North Sacramento, and a large portion of unincorporated territory of Sacramento County.

Definite plans are under way for the organization of districts in Orange County and Venice. There is considerable interest in the formation of districts in Solano County and in San Diego.

One Hundred and Two Children Aided Through Crippled Child Act.—Since the Crippled Child Act went into effect in the fall of 1927, certificates enabling the treatment of 102 children have been issued. Three such certificates were issued in 1927, sixty-eight in 1928, and during the first four months of 1929 thirty-one such certificates have been issued. The appearance of 1274 cases of epidemic poliomyelitis in 1927 led to the making of a comprehensive survey of paralyses by the State Department of Public Health. A large number of crippled children were left in the wake of this disastrous epidemic. All counties of the state, with the exception of Alameda, San Francisco, Inyo, and Los Angeles City, were covered in the survey. Home visits and calls upon local physicians for the purpose of ascertaining the condition of children who had suffered from epidemic poliomyelitis were made in all of these counties. During 1928 twenty-four counties of the state were visited and cases checked. The following table gives full information concerning the results obtained through the operation of the Crippled Child Act during the nineteen months that it has been in operation:

Number of certificates issued		102
Cases dismissed as cured	8	
Cases no longer hospitalized but still under observation	43	
Cases in convalescent homes	4	
Cases pending	8	
Cases which have not been hospitalized	8	
Cases which died	2	
Cases hospitalized	29	
Number of surgeons		22
Number of hospitals		21
Number of counties		34

New Health Officer at San Bernardino.—Dr. W. W. Fenton has been appointed city health officer of San Bernardino to succeed Dr. Ivan Lewis Finkelberg.

Lepers Are Sent to Federal Institution.—Six lepers were sent to the Federal Leprosarium at Carville, Louisiana, on May 15. Four of these patients were from San Francisco, one from Los Angeles, and one from Oakland. Since this government institution was opened in 1922, eighty-eight lepers have been sent there from California. Nearly all cases of this disease that are discovered within the state are in Mexicans and Orientals. All such patients who have not acquired residential status are deported. The Federal Leprosarium was established by an act of Congress in 1917, following a campaign for the building of such an institution begun by the California State Board of Health in 1914. About three hundred patients are cared for in the leprosarium. Patients are transferred from California in May and December of each year. Their removal to Carville relieves our counties of the onerous burdens associated with their care and treatment.

List of Diseases Reportable by Law.—Anthrax, beriberi, botulism, cerebrospinal meningitis (epidemic), chickenpox, Asiatic cholera, coccidioidal granuloma, dengue, diphtheria, dysentery (amebic), dysentery (bacillary), encephalitis (epidemic), erysipelas, flukes, food poisoning, German measles, glanders, gonococcus infection, hookworm, influenza, jaundice (infectious), leprosy, malaria, measles, mumps, ophthalmia neonatorum, paratyphoid fever, pellagra, plague, pneumonia (lobar), poliomyelitis, rabies (animal) rabies (human), Rocky Mountain spotted (or tick) fever, scarlet fever, smallpox, syphilis, tetanus, trachoma, tuberculosis, tularemia, typhoid fever, typhus fever, undulant (Malta) fever, whooping-cough, yellow fever.

Quarantinable diseases — Cerebrospinal meningitis (epidemic), Asiatic cholera, diphtheria, encephalitis (epidemic), leprosy, plague, poliomyelitis, scarlet fever, smallpox, typhoid fever, typhus fever, yellow fever.

Health Hints for Campers.—A spade or shovel is useful to bury camp wastes, to level off the ground where a tent is to be pitched, and to dig trenches. It is necessary, also, in putting out a camp fire.

Help to prevent forest fires.

It pays to be particular about the purity of the drinking water.

In districts where mosquitoes abound, it is important to provide protection against these biting insects. Mosquito netting of fine mesh will prove useful.

A mosquito repellant that has been tried and found useful is made as follows:

Take one and one-half parts of oil of citronella, one part of coal oil, two parts of cocoanut oil, to which add one per cent of carbolic acid. This may be rubbed on the hands and face or it may be sprinkled lightly on a towel which is suspended near the camper's head.

Campers who are susceptible to poison oak will find the application of a 10 per cent solution of iron chlorid useful in the prevention of poisoning by this irritant. It is also useful in the treatment of the skin irritation.

Communicable Disease Reports for May 1929:

Chickenpox	2367
Diphtheria	204
Encephalitis (epidemic)	4
Measles	491
Meningitis (epidemic)	85
Poliomyelitis	12
Scarlet fever	1729
Smallpox	263
Typhoid fever	41
Whooping-cough	1238

Two cases of coccidioidal granuloma were reported the last week in May.

CALIFORNIA BOARD OF MEDICAL EXAMINERS

By C. B. PINKHAM, M. D.
Secretary of the Board

Nineteen Hundred Twenty-Nine Amendments Affecting the Medical Practice Act of the State of California

The following amendments to the Medical Practice Act were considered by the legislature during the last session:

Senate Bill 106 (Crowley) added a new section to the Medical Practice Act, prohibiting the ***use of Board of Medical Examiners badges*** except by its attorneys or special agents. The bill was allowed to die in the Assembly committee, inasmuch as another bill then passed accomplished the same purpose.

Senate Bill 213 (Crowley) amends Section 12 of the Medical Practice Act by permitting the board in its discretion to require ***a practical, clinical, oral examination of commissioned officers*** in the medical corps of the United States Army, Navy, and Public Health Service, whose credentials do not entitle them to a certificate without an examination. A clause also provides for refund of $40 of the $50 application fee in case the certificate be not issued. (Chapter 217, Statutes 1929.)

Senate Bill 214 (Crowley) amends Section 9 of the Medical Practice Act by requiring that the applicant's ***course of instruction must be "resident,"*** and also increases the ***chiropody requirements*** after July 1, 1930, to three years—this at the request of the State Association of Chiropodists. The amendment requiring an additional year for graduates of medical colleges was stricken from the bill at the first committee hearing, several persons appearing in opposition and no one in support thereof. (Chapter 309, Statutes 1929.)

Senate Bill 215 (Crowley), companion bill to Senate Bill 214, increases ***chiropody requirements*** after July 1, 1930, to 2625 hours. (Chapter 310, Statutes 1929.)

Senate Bill 216 (Crowley) amends Section 17 of the Medical Practice Act by adding the words "blemish" and "disfigurement" in ***defining what constitutes a violation and prohibits the use of the words*** "chiropodist," "orthopedist," "orthopedic specialist," "foot specialist," "osteologist," or "Doctor of Osteology" without holding a certificate issued under the Medical Practice Act, exemption being made for those engaged in the manufacture, recommendation, or sale of either corrective shoes or appliances for human feet. (Chapter 233, Statutes 1929.)

Senate Bill 217 (Crowley) amends Section 14 of the Medical Practice Act in connection with causes for revocation of license as follows:

Adds subdivision fourth (*a*) making the record of ***conviction of a felony*** conclusive evidence;

Adds subdivision fourth (*b*) making ***conviction of or cash compromise of a violation of the Harrison Narcotic Act*** conclusive evidence;

Amends subdivision eleventh (*a*) of the present law by ***prohibiting the use of the suffix "M. D."*** by the holder of ***any*** certificate provided for in the Medical Practice Act unless granted after the completion of a full course of study in an approved medical school;

Amends subdivision eleventh (*b*) by ***prohibiting the use of the suffix "D. O."*** by the holder of ***any*** certificate provided for in the Medical Practice Act except one who has been granted the degree Doctor of Osteopathy after the completion of a full course of study in an approved osteopathic school;

Adds subdivision eleventh (*c*) ***prohibiting the use of the suffix "D. S. C.,"*** except by one who has been granted that degree after the completion of a full

course of study in an approved school of chiropody. (Chapter 311, Statutes 1929.)

Senate Bill 523 (Crowley) amended Section 13 (reciprocity) of the Medical Practice Act as follows:

1. By rearranging the phraseology.

2. By *permitting the California board to go back of the endorsement* of the board which issued the certificate used as basis of application, this having been found necessary following a court decision in California's attempt to revoke a license issued by the California board on reciprocity, wherein the court held the board had no authority to go behind the endorsement of the sister state board. In other words, under the present law, if a certificate had been issued by a sister state and properly certified, regardless of any disclosures in connection with the irregularity in such issuance, our legal department reports the courts in Los Angeles hold that the California board cannot make any further inquiry.

3. *Prohibits consideration on a reciprocity basis* of any applicant who has failed to pass the written examination in California. Such an applicant must again apply for California's written examination, and will not be permitted to gain a license otherwise.

4. Requires that those *reciprocity applicants licensed by the Board of Osteopathic Examiners "to practice osteopathy" or as "drugless physicians"* must pursue an additional course of instruction in compliance with the provisions of Section 10 of the Medical Practice Act before they are eligible for oral examination for a "physician's and surgeon's" license. (Chapter 812, Statutes 1929.)

Senate Bill 628 (Nielsen) proposed to amend the Medical Practice Act by adding a course of instruction and a new certificate designated as an "osteopathic physician's certificate," and also proposed to strike from the present Medical Practice Act all reference to the drugless practitioner certificate. The bill was tabled at the first committee hearing.

Assembly Bill 688 (Cloudman) adds Section 11 (*a*) to the Medical Practice Act, permitting the Board of Medical Examiners, in its discretion, with or without oral examination, to accept *diplomats of the National Board of Medical Examiners.* (Chapter 330, Statutes 1929.)

Assembly Bill 809 (Roland) amends Section 15 of the Medical Practice Act by *requiring certificates to be "registered" rather than "recorded"* in the office of the clerk of whatever county the individual may practice, with a further provision that the *registration* shall show "the scope of practice permitted thereunder as prescribed on said certificate so registered."

News Items, Medical Licentiates

California's usury law, with its "triple threat" penalty, was given its first application in San Francisco courts yesterday. Dr. Clayton E. Wheeler, gland specialist here and in Los Angeles, is the defendant. Lou H. Rose, 470 Beverly Drive, Beverly Hills, asks him to pay $19,889 damages for collecting from Rose $6629 alleged usurious interest. The complaint charges that Rose borrowed $12,500 from Wheeler in March 1927, and on August 4, 1928 paid him considerable in excess of that sum in cancellation of the loan (*San Francisco Examiner,* May 17, 1929). (Previous entry, December 1928, and January and June 1929.)

Dr. Joseph T. Wrenn, San Francisco physician and former Superintendent of the El Dorado County Hospital, was sentenced to serve two terms of from one to ten years in San Quentin Prison yesterday. Sentence was pronounced in Placerville after Doctor Wrenn pleaded guilty to two counts of an indictment charging him with embezzling $12,000 from his father's estate. Sentences will run consecutively, the court ruled (*San Francisco Examiner,* May 26, 1929).

Dr. C. E. Camp, sixty-two, practicing physician for many years in San Pablo, must serve twenty-five years in San Quentin Prison for high misconduct in his relation with young girls in that community, the Prison Board has determined in fixing his sentence, according to word received here this morning (*Martinez Gazette,* May 15, 1929). (Previous entries, March and September 1928.)

Citations calling licentiates before the Board of Medical Examiners for legal hearings scheduled at Native Sons Hall, San Francisco, commencing at 10 a. m. Tuesday, July 16, have been issued as follows: Roy L. Buffum, M. D., Long Beach, narcotics; Norman Goodenow, M. D., Pasadena, narcotics; Robert C. Kirkwood, M. D., Missouri, narcotics; Roy S. Lanterman, M. D., Glendale, alleged illegal operation; William McKenery Moore, M. D., Maywood, narcotics; Leonard Pulsifer, M. D., Davis, narcotics; Moses E. Smith, M. D., Plymouth, narcotics; Ormiston Swayze, M. D., Nevada City, narcotics; Fred B. Tapley, M. D., Marysville, alleged illegal operation; Paul S. Traxler, M. D., Glendale, alleged illegal operation; Joseph T. Wrenn, M. D., San Francisco, penitentiary commitment.

"Blood spots found in the bathroom of Dr. Frank P. Westlake's home on West Eleventh Street yesterday were identified by City Chemist Walsh as being of human origin. This point was considered by Captain Bright of Sheriff Traeger's Homicide and Investigation Detail as one of the strongest points in the chain of evidence against Westlake, who is accused of murdering Mrs. Laura B. Sutton, whose dismembered torso was found in the Los Angeles River bottom near Linwood, April 4, last. . . . " Finding no record of Frank P. Westlake in the office of the Board of Medical Examiners or in the 1927 American Medical Association directory, we communicated with the Criminal Identification Bureau, Sacramento, and received the following information: "In reply to your letter of June 10, asking for information relative to Frank P. Westlake, subject is described as: Ch hair, Blue eyes, 5-4½ 135, 41-19, 1/2 U/R II/II 16/16: 12-2-19 Richmond No. 990 as Westlake: G. L. from R. R. cars (with M. H. Bon, No. 987, and C. H. Beyers, No. 989, and S. L. Whittlesey, No. 991, a switch crew for Santa Fe R. R.—alleged to have stolen a lot of goods from freight cars and delivered them to K. Atonich, No. 988, who sold same)."

General News Items

M. Araki on May 27 pleaded guilty to a violation of the Medical Practice Act in Los Angeles and paid a fine of $100 on a charge of violation of the Medical Practice Act.

Instead of receiving a sentence of from one to ten years for manslaughter, which would have been his fate had he "left well enough alone," Dr. Arthur O. Berg, chiropractor, today appeared before Superior Judge Carlos S. Hardy to receive a life sentence for second degree murder. It will be the second time Doctor Berg has been sentenced to life for the murder of fifteen-year-old Page Walden, university student, through an alleged illegal operation. The chiropractor was originally convicted last year and spent eight months in San Quentin until the Supreme Court granted his appeal. When first returned here for a new trial, Doctor Berg accepted the terms offered by the District Attorney's office and pleaded guilty to manslaughter, which would have carried the lighter penalty. Suddenly, however, he fired his attorney, John Jorgenson, who had won the appeal, and changed his plea, stating that he wished to stand trial again. The second trial, which ended last week, resulted again in conviction for second degree murder (*Santa Monica Outlook,* May 28, 1929). (Previous entries, July and September 1928, and May 1929.)

Judge C. L. Bogue yesterday issued a bench warrant for Melvin Richards, chief state witness in the trial of Dr. J. C. Cowle, head of the Cowle Chiropractic School, who is charged with practicing without a license, when the defense filed a complaint that an attempt was being made to buy state witnesses. Richards failed to appear when the case was called for trial yesterday, although he and J. R. Townsend presented Bert Humason, chief inspector for the Chiropractic Board, with the affidavits which resulted in Cowle's arrest. The defense charged that the missing man told his employer he was going to leave the state and "get things fixed" so he would not have to testify (*Los Angeles Illustrated Daily News*, June 11, 1929).

Branded by prosecutors as members of a widespread ring dealing in fraudulent medical licenses, seven men were indicted by the Cook County (Illinois) Grand Jury today and four of them were under arrest tonight—one in Pittsburgh, Pennsylvania, one in St. Louis, one in Springfield, Illinois, and the other one here (Chicago). Operations of the seven are said to have extended over several states and a period of about three years. Licenses, it is charged, were sold to persons not entitled to them for from $600 to $3000. Barron, when arrested, was carrying a suitcase full of fake licenses and a stock of seals, officers asserted. Among the licenses issued, it is charged, were scores to graduates of a medical school in Connecticut, which was closed after an investigation (press dispatch, dated Chicago, June 14, published in the *San Francisco Examiner*, June 15, 1929). It is evident that more states need to pass a diploma mill bill similar to that in force in California, which makes it a felony to traffic in fraudulent documents in an attempt to gain a license either before the medical, osteopathic, or chiropractic board.

William F. Hoque, maker and dispenser of a so-called cancer remedy, was fined $500 yesterday by Judge J. R. Welch for practicing medicine without a license. . . . Hoque is said to have inherited the formula of the remedy from his father, the late Francis M. Hoque, who died in 1921 (*San Jose Mercury-Herald*, May 18, 1929). (Previous entry, May and June 1929.) Commenting on this case our Special Agent Davidson reports: "It is most enlightening to learn from Hoque's own testimony, under oath, that his cancer salve only attacks the cancerous tissue and does not affect good tissue, and that it is a secret formula handed down through generations of the Hoque family. To our personal knowledge there is hardly a community in the country, and we know in California, that has not some person who has a remedy handed down by their ancestors for the cure of cancer, and the statement of Hoque that his remedy is an escharotic paste which will *only* attack cancerous tissue is so far afield from the truth and our actual knowledge as to the action of drugs as to make the entire transaction real comedy, if it were not for the pathetic results of an ignorant and credulous public being imposed upon by a charlatan of this type."

George D. Johnson, seventy, 222 West Oak Street, was arrested this afternoon on a charge of practicing medicine without a license. According to Captain of Detectives Fredericks, the man was arrested on the same charge several years ago and served a jail sentence (press dispatch dated Stockton, May 29, published in the *San Francisco Examiner*, May 30, 1929). (Previous entries, February and September 1926, January and March 1927.) Commenting on this case our special agent relates that "at the time of Johnson's arrest he had in his pocket two pairs of long, curved uterine forceps, two pairs of straight uterine forceps, two vaginal speculums, two half-tubes of KY Jelly, and one box of assorted sizes 16, 17, and 18 Sea Tangle Tents. . . . " Johnson is alleged to be a druggist and is asserted to have no medical training.

According to reports, T. Kushiyama pleaded guilty to a violation of the Medical Practice Act in Los Angeles, May 28, 1929, and on May 31 was fined $50.

The California Assembly has voted to outlaw cash compromises in Federal narcotic cases and to prohibit the sale of veronal without a doctor's prescription. The cash compromise measure will give the Board of Medical Examiners a powerful weapon to help eliminate the unscrupulous physicians who violate the narcotic laws. Judging from the late rumbles down Hollywood way, in which several prominent physicians were implicated as "dope peddlers," the board needs such a weapon. As for prohibiting the sale of veronal, it is about time that some kind of a brake was put upon this traffic.—*San Francisco Wasp News Letter*, May 18, 1929.

Dr. Donald McDonald, said to be a graduate of McGill University, Toronto, was arrested today, charged by the American Trust Company with having passed a worthless check for $350. McDonald, according to Detective Sergeants Tom Hyland and James Hanson, has left a trail of bad checks across the country. His scheme, police declare, was to have a fellow alumnus of McGill endorse his bad paper (*San Francisco News*, May 27, 1929). No one by the name of Donald McDonald appears on the records of the Board of Medical Examiners as licensed to practice in this state.

According to reports, James A. McCarthy pleaded guilty to a violation of the Medical Practice Act in Los Angeles, June 3, 1929, and was sentenced to pay a fine of $100 and serve ninety days in the city jail. The fine was paid and jail sentence suspended for two years.

Mrs. M. H. Manning, sixty years old, 765 Watkins Street, Hayward, was held in the Alameda County jail last night for investigation following the death yesterday of Mrs. Olive White, twenty-eight, wife of Emanuel White, Jr. of Decoto. Mrs. White, according to the death certificate of Dr. E. A. Ormsby of Centerville, who treated her at Hayward Central Hospital, died following an illegal operation. Doctor Ormsby reported to Coroner Grant D. Miller that when he was called into the case, May 28, Mrs. White made a written statement accusing Mrs. Manning of having performed the operation on May 25. Mrs. Manning denied having performed the operation.—*San Francisco Chronicle*, June 5, 1929.

Arrested by investigators for the State Chiropractic Board, Dr. Gertrude Howe, Los Angeles, and her two assistants, Corinne Kissell and Marjorie Miller, were today under ninety-day sentences in the county jail, following their convictions of vagrancy and conducting a disorderly house. Doctor Howe and her assistants were arrested following a raid on their "chiropractic establishment." 430 South Western Avenue, Los Angeles, which examiners declare was a blind for an immoral house.—*Santa Monica Outlook*, May 24, 1929.

According to report of our Special Agent Davidson, Moses Edwin Smith pleaded guilty in United States District Court at Sacramento, Friday, May 17, 1929, to a violation of the Harrison Narcotic Law and is reported to have been sentenced to fifteen days in the county jail in connection with the charge of sending narcotics through the United States mail to Los Angeles. (Previous entry, June 1929.)

According to reports, Hideo Takahashi on May 28, 1929, was found guilty in the courts of Los Angeles of violation of the Medical Practice Act and on May 31 was fined $50.